USAID | SOUTHERN AFRICA
FROM THE AMERICAN PEOPLE

ANNUAL PROGRESS REPORT

Resilience in the Limpopo Basin (RESILIM) Program

Year Four: October 2015 – September 2016

October 2016
This document was produced for review by the United States Agency for International Development.
It was prepared by Chemonics International Inc.

ANNUAL PROGRESS REPORT

Resilience in the Limpopo Basin (RESILIM) Program

Year Four: October 2015 – September 2016

Executive Summary

The RESILIM program's fourth programmatic year signified the transition from the first three RESILIM years, which included start-up, stakeholder buy-in, building scientific evidence, creating an enabling environment, catalyzing action and raising awareness, to its consolidation phase for legacy and sustainable action.

During RESILIM's consolidation phase, the program is focusing on four legacy pillars to ensure that RESILIM-supported initiatives are sustained after the life of the project as depicted in Figure 1.

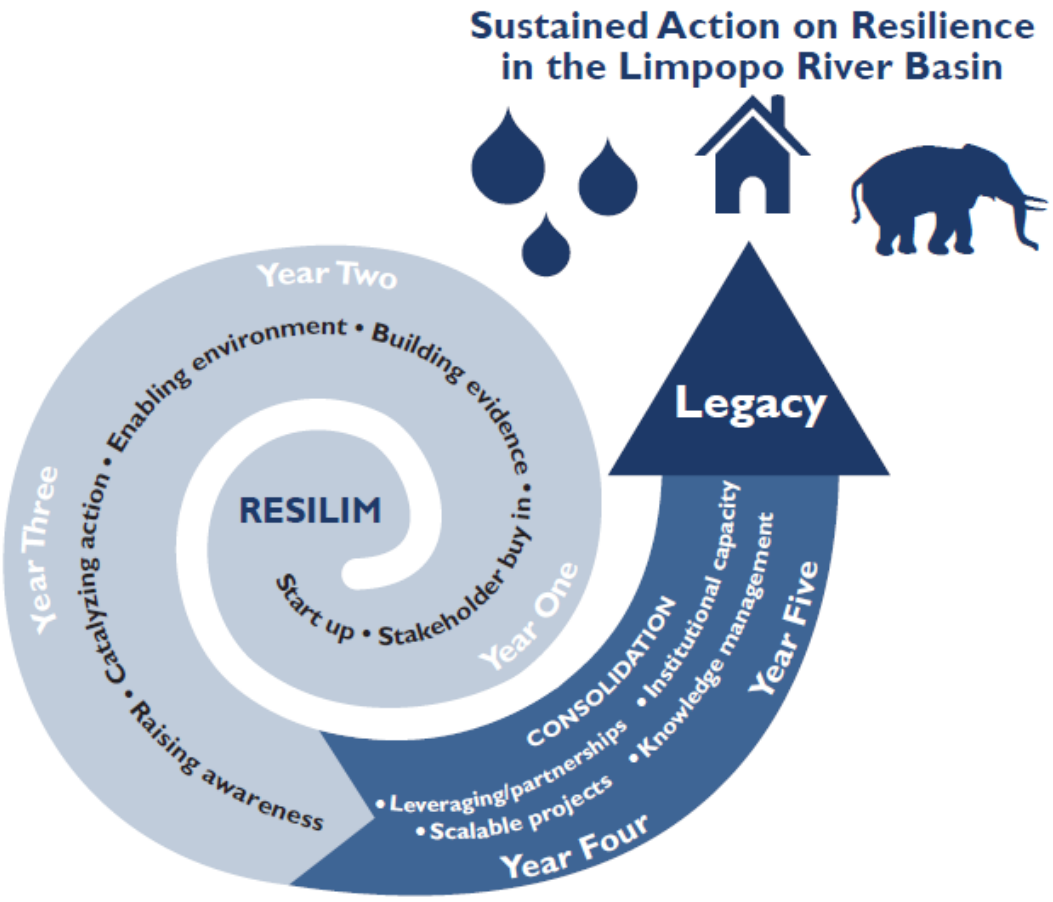


Figure 1: *RESILIM's path from Year One to Year Three included key strategic interventions, culminating in the transition to the consolidation phase. Years Four and Five highlight the program's legacy pillars which are key elements of ensuring the future sustainability.*

Institutional capacity development – RESILIM is targeting institutions at three levels: 1) Transboundary level, such as LIMCOM, Transfrontier Conservation Areas, and bilateral structures; 2) National level, such as national government institutions; and 3) Local level, such as the private sector, communities and civil society. In Year Four, RESILIM continued to include LIMCOM Commissioners in its program work, and supported government, organizations, and communities in joint learning in all of its work.

Knowledge management and communication – RESILIM, working closely with its partners, is focusing its efforts in capturing lessons learned from RESILIM-supported initiatives that will be shared with RESILM and between RESILIM partners - a growing community of practice. In Year Four, RESILIM made the best use of experience gained in the first three years of operation by re-sharing its knowledge in different formats and fora, and reiterating the resilience message.

Scalable adaptation projects – in this consolidation phase the emphasis is on scaling-up of existing initiatives. In Year Four, RESILIM continued investing in pilot projects whose aims were to address specific issues related to sustainable livelihoods, climate change adaptation or mitigation and improved natural resources management, all of which when aggregated, enhance adaptive and transformative capacity in the Basin.

Leveraging partnerships and mobilizing resources– to maintain the momentum created by the RESILIM program, all activities are prioritizing influence for sustainability. In Year Four, RESILIM continued to build its relationships with partners, and looked to the future by encouraging the formation of new institutions aimed at developing sustainability and enhancing resilience.

Year Four saw RESILIM make the following progress.

Climate vulnerability reduced:

RESILIM and its partners completed the Limpopo Disaster Risk Reduction Action Plan, a set of guidelines that will strengthen coordination among LIMCOM's Member States to reduce the adverse effects of droughts and floods. The endorsement process for the plan provides a vehicle for ongoing engagement of LIMCOM in RESILIM's final program year, and for the mobilization of resources to support transboundary work.

New knowledge was created and organized through work with partners on understanding the resources of the Ramotswa aquifer, an important groundwater body shared by Botswana and South Africa. Through collaborative learning, RESILIM helped stakeholders understand data produced from surveying the aquifer, and the technology used to collect it. Most significant in this process was the development of a joint information system and management framework for water specialists in the two countries – a contribution to sustainable transboundary cooperation.

RESILIM's investment in restoration of the natural protective infrastructure of coastal mangroves in Mozambique is beginning to produce positive results, with reports of returning aquatic resources, and increased visibility and capacity of RESILIM's partner, the Mozambican Centre for Sustainable Development of Coastal Zones.

Conservation and management of priority ecosystems improved:

In Year Four, RESILIM's work to identify options for livelihoods diversification in the Great Limpopo Transfrontier Conservation Area bore fruit in the form of an alternative livelihoods strategy for conservation area, including an integrated conservation and development framework for the highly vulnerable Pafuri Node. Related work involved legal training to deal with wildlife crime, and support for specialized rhino protection training. RESILIM contributed its experience and expertise to two major international meetings focused on biodiversity – the Convention on the International Trade of Endangered Species and the 2016 IUCN World Conservation Congress.

RESILIM worked with local communities in the Marico Catchment and Nylsvley wetland area in South Africa to build capacity in applying biodiversity conservation approaches in evaluating development activities that could have negative impacts on water supply and ecosystem services. A partnership with the Man and the Biosphere Program in the Department of Environmental Affairs, South Africa contributed to the Marico work. This was geared towards establishing a Groot Marico Biosphere, and to RESILIM's advocacy for protecting high altitude catchments in the Basin.

RESILIM continued to build the capacity of the Joint Permanent Technical Committee Task Team on Water Quality and Water Hyacinth with a communications plan, a finalized Memorandum of Understanding for ongoing work, initiation of a water quality and invasive weed monitoring program, and participation in strategic meetings.

Training in environmental flows for Limpopo Basin stakeholders taught participants both the importance of, and methods for, valuing ecosystems services.

Funds leveraged for climate change adaptation and biodiversity conservation:

Investment amounting to more than $850,000 has been leveraged with support from RESILIM between PY1-PY4 (Annex 1) towards various climate change adaptation and biodiversity conservation activities in the LRB. Leveraged resources were secured from various sources including from public, private, and non-governmental organizations e.g. i) Peace Parks Foundation (PPF) for the development of the GLTFCA Alternative Livelihoods Diversification Strategy and the Pafuri/Sengwe Node Conservation Development Framework, ii) Grid-Arendal and Global Water Partnership Southern Africa (GWPSA) on the preparation of the Limpopo River Basin-Atlas of our Changing Environment, iii) the hydrogeological and socio-economic assessment of the Ramotswa Transboundary Aquifer, including the development of an Information Management System (RIMS), with co-funding from the Governments of Botswana and South Africa, IWMI and IGRAC, iv) the Biosphere Landuse Information Sharing System (BLISS), which is a partnership co-funded by the Government of South Africa (DEA), Kruger2Canyon Biosphere and RESILIM. In Year Four, specifically, RESILIM managed to leverage more than USD100, 000 towards various climate change adaptation and biodiversity conservation interventions through its partnerships. Peace Parks Foundation continued to support the livelihood diversification strategy for the Great Limpopo Transfrontier Conservation Area in the amount of USD 25,264. The International Groundwater Resources Assessment Centre has committed USD 12,400 towards further developing the Ramotswa Information Management System for the Ramotswa transboundary aquifer work. The South African Department of Environmental Affairs provided USD 3,458 to run a workshop on the impact of climate change on the savanna biomes. GRID-Arendal supported training of contributors to the Limpopo Basin Atlas in the amount of USD 19,025. The Global Water Partnership Southern Africa provided a further USD 17,245 to support the inception workshop for the Atlas, while the Marico River Conservation Association contributed USD 24,266 to the application to the Man and the Biosphere Program.

Increased resilience for people through increased adaptive capacity:

In Year Four, RESILIM collaborated to produce a final manuscript for the *Limpopo Basin Atlas - Our Changing Environment,* a resource that will provide evidence-based analyses on environmental and socio-economic changes in the Basin, including their drivers and outcomes, in a format that is user-friendly for most planners and policy makers in the catchment area.

RESILIM worked with stakeholders to improve the rehabilitation and management of the Tati River in Botswana, helped to kick-start development of a Green Growth strategy for the country's North-East District, and worked with both government and non-government organizations to improve the commercial prospects for veld product users.

RESILIM's network of stakeholders were empowered through several knowledge management activities. These including a training workshop to improve Limpopo stakeholders' communication skills, participation of a RESILIM expert in a televised panel discussion about climate change, formalizing a community of practice through the Southern African Resilience Alliance, and organizing an innovative series of informal talks, the *Resilience Rants*. High quality accessible knowledge products were developed to raise awareness of high-level government officials of challenges facing the Limpopo Basin at a high level dialogue meeting, bringing the resilience message to policy makers.

RESILIM continued to make the most use of its previous work to build adaptive capacity, sharing, for example, findings of the Risk and Vulnerability Assessment with groups throughout the Basin, and initiating discussions about building resilience in meetings organized by partners.

RESILIM continued to work with the LIMCOM Technical Task Team to prepare for development of the LIMCOM Strategic Plan for 2016 – 2020, with a view to incorporate resilience building activities that focus, not only on water, but also on climate change adaptation and the mitigation of threats to biodiversity.

Challenges and remedial actions:

Stakeholder buy-in to a shared vision and policy for the Basin remains the greatest challenge to RESILIM's work. There is need to both repeat the message in appropriate contexts and language for stakeholders well-known to RESILIM, and to engage with a broader cross-section of people and organizations that could make or break development of a sustainable management regime for the Basin.

Slow endorsement and approval processes are a problem for a time-limited program such as RESILIM. Identifying champions and vested interests that can carry the work going forward is a key activity in the program's closing months.

Excellent materials produced from lessons learned and best practices generated from RESILIM activities have not been shared with all: there is a need for a strategy for the use of knowledge-sharing platforms, with consideration of the rich variety of languages used in the region.

It is a challenge to keep people's skills up to date with technological developments in the field of water engineering and environmental science. Ongoing technical capacity enhancement to better understand environmental flows, transboundary water governance, climate change science and adaptation, hydrology, and information systems management needs continuous planning and adaptation.

During PY4 the low capacity of LIMCOM continued to be a challenge to the development of the enabling environment necessary for improving resilience of livelihoods and ecosystems in the face of climate change. However, the planned appointment of a full-time LIMCOM Executive Secretary to a more permanent Limpopo Watercourse Commission (LIMCOM) Secretariat during PY5 is expected to improve the capacity of LIMCOM to effectively coordinate transboundary management.

Institutional capacity is an ongoing problem not only at the transboundary level with LIMCOM, but also with parastatals and local governance bodies with evolving and weak institutional structures. Scanning the environment for other existing programs that support institutional capacity building, and partnership building with these programs, would help secure the sustainability of RESILIM's work.

RESILIM's work is part of a continuum of interventions by many different actors that seek to create a more secure and healthy environment for people living in the southern African region. Understanding this is to acknowledge that the program's most important legacy will be in the relationships (and partnerships) developed. The strength of these will determine if the rich knowledge generated through RESILIM's work will be put to use to conserve the natural resources of the region and increase the ability of its people to enjoy life at more than subsistence level, in the face of climate change.

RESILIM has managed to achieve considerable success in implementing its plan for 2015/16 and while progress has been achieved in all initiatives some have not reached their anticipated level of completion. This was the case with the follow-on activities with Southern Africa Wildlife College (SAWC) and the Center for the Sustainable Development of Coastal Zones (CDS-ZC), with delays primarily being caused by extended discussion and negotiation on the scope of these initiatives with the aim of maximizing the benefits of these initiatives within the limited budgets available. Progress with completing Marico River Conservation Association (MRCA) and GWP-SA's activities were hampered by circumstances out of their direct control. With MRCA an unfortunate mistake in the proclamation of a protected area (that will form the core of the planned Marico Biosphere) required the gazetting process to be repeated, while the approval for in-country surveys, that are critical inputs to the WDM CBA being developed by GWP-SA, took longer than anticipated. These challenges were resolved towards the end of the project year and the initiatives will now be completed during RESILIM's final year

Contents

Annexes

Annex 1: M&E Progress Report.

Annex 2: DRR Action Plan.

Annex 3: Ramotswa Socio-economic and institutional Assessment

Annex 4: Ramotswa Hydrolgeological Mapping

Annex 5: GLTFCA Livelihoods Diversification Strategy

Annex 6: GLTFCA – Integrated Conservation and Development Framework.

Annex 7: JPTC Communications Plan

Annex 8: JPTC MoU.

Annex 9: Eflows Training Report

Annex 10: LRB Atlas Manuscript.

Annex 11: LIMCOM SWOT Analysis

Annex 12: ToRs Botswana North East District's Green Growth Strategy.

Annex 13: Constitution for Botswana Natural/ Veld Products Association.

Acronyms

3D	3-dimensional
AEM	Airborne Electromagnetic
AfriMAB	African Man and the Biosphere Network
AMCOW	African Ministers Council on Water
APP	Smart phone application
BLISS	Biosphere Landuse Information Sharing System
CBNRM	Community-based Natural Resource Management
CBO	Community-based Organization
CCTV	China Central Television
CDS-ZC	Center for the Sustainable Development of Coastal Zones
CEESP	Commission on Environmental, Economic and Social Policy
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CSIR	Council for Scientific and Industrial Research
DEA	Department of Environmental Affairs
DGS	Department of Geological Survey
DOJ	Department of Justice
DRR	Disaster Risk Reduction
DWA	Department of Water Affairs
DWS	Department of Water and Sanitation
Eflows	Environmental Flows
EWT	Endangered Wildlife Trust
ESARO	East and Southern Africa Regional Office
FEW-nexus	Food, Energy, Water-nexus
GEF	Global Environment Facility
GIS	Geographic Information System
GLTFCA	Great Limpopo Transfrontier Conservation Area
GLTP	Great Limpopo Transfrontier Park
GMI	Groundwater Management Institute
GWP-SA	Global Water Partnership Southern Africa
ICDF	Integrated Conservation and Development Framework
ICP	International Cooperating Partner
IPCC	Intergovernmental Panel on Climate Change
IGRAC	International Groundwater Resources Assessment Centre
InfoRM	Index for Risk Management
IUCN	International Union for Conservation of Nature
IWMI	International Water Management Institute
JMB	Joint Management Board
JPTC	Joint Permanent Technical Committee
K2C	Kruger to Canyons
KAZA-TFCA	Kavango Zambezi Transfrontier Conservation Area
KCDI	Kwalata Community Development Initiative
KCS	Kalahari Conservation Society
KYT	Kgetsi ya Tsie
LEDET	Limpopo Department of Economic Development, Environment and Tourism
LIMCOM	Limpopo Watercourse Commission
MaB	Man and Biosphere
M&E	Monitoring and Evaluation
MEC	Member of the Executive Council
MOU	Memorandum of Understanding
MRCA	Marico River Conservation Association
NGO	Non-Government Organization
NRGF	Natural Resource Governance Framework
ORASECOM	Orange-Senqu River Commission
OSC	Overseas Strategic Consulting

OSISA	Open Society Initiative for Southern Africa
PASA	Programa de Apoio para o Sector do Ambiente" (Government Support Program for the Environmental Sector)
PPF	Peace Parks Foundation
RA	Resource Africa
RBO	River Basin Organization
READ	Rural, Environment and Agricultural Development
RESILIM	Resilience in the Limpopo River Basin
RESILIM-O	Resilience in the Limpopo River Basin – Olifants
RHP	River Health Program
RIMS	Ramotswa Information Management System
RLC SA	Regional Leadership Center for Southern Africa
SADC	Southern African Development Community
SA-LED	South Africa Low Emissions Development
SANBI	South African National Biodiversity Institute
SARA	Southern Africa Resilience Alliance
SARDC	Southern Africa Research and Documentation Center
SAREP	Southern Africa Regional Environmental Program
SARPO	Southern Africa Regional Program Office
SASDIR	Southern Africa Society for Disaster Risk Reductions
SASSCAL	Southern African Science Service Center for Climate Change and Adaptive Land Management
SASUSG	Southern African Sustainable Use Specialist Group
SAWC	Southern Africa Wildlife College
SGWM	Sustainable Groundwater Management
SWOT	Strengths, Weaknesses, Opportunities and Threats
TFCA	Transfrontier Conservation Area
ToR	Terms of Reference
TRMC	Tati River Management Committee
UEM	Eduardo Mondlane University
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNODC	United Nations Office on Drugs and Crime
USAID	United States Agency for International Development
WESSA	Wildlife and Environmental Society of South Africa
WCC	World Conservation Congress
WUC	Water Utilities Corporation
WWF	World Wildlife Fund
XRI	Exploration Resources International
YALI	Young African Leadership Initiative

YEAR FOUR PROGRESS RELATIVE TO YEAR FOUR PLAN TARGETS

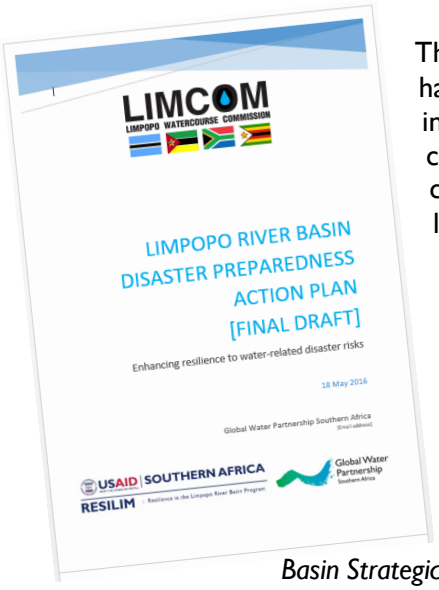
1. Component 1: Vulnerability of the Limpopo River Basin reduced

1.1 Improving preparedness: development of the Disaster Risk Reduction Action Plan for the Limpopo River Basin

Developed Limpopo Basin DRR Strategy and Action Plan

The Limpopo Basin is characterized by natural water scarcity, intensified by high population densities, land degradation, and pollution. Various climatic forces impact on the Basin, creating conditions for droughts and floods. Climate change is expected to further exacerbate this situation as seasonal droughts lengthen and become more intense, and rainfall becomes more scattered and variable. Increased temperatures will result in high evapotranspiration rates likely to reduce the amount of available water for various livelihoods and ecosystem purposes. Impacts on water availability, agricultural productivity and livelihoods security have the potential to be immense. For effective disaster risk reduction (DRR), close monitoring and analysis of these systems is critical to forecasting and planning at various levels.

Overall, the Basin has limited capacity to respond to these challenges because of lack of adaptiveness in its institutions and planning processes, coupled with inadequate or poorly managed infrastructure. As disasters occur more frequently over time, this increases the vulnerability of the poor, who cannot afford to deal with the shocks. As floods, droughts and other extreme weather events continue, countries and communities will need to learn how to adapt, and anticipate and better prepare for these disasters.



The Limpopo River Basin countries, no strangers to flood and drought, have national disaster preparedness and management plans in place that incorporate coordinated warning and response with neighboring countries. They now need to begin planning and acting at the basin level, changing practices that currently increase the likelihood of damage and loss of life, and managing more resources jointly.

In Year Four, to support the Limpopo Watercourse Commission (LIMCOM) in meeting this need, a RESILIM partnership completed development of a Disaster Risk Reduction Action Plan for the Basin (Annex 2).

2.3.1 Thinking beyond water, moving beyond response

The Action Plan was developed through a review of the 2007 *Limpopo Basin Strategic Plan for Reducing Vulnerability to Floods and Droughts* and related literature, and a multiphase process of consultations with national and local stakeholders, culminating in a basin-wide consultation in March 2016. The final draft of the plan was presented to the LIMCOM Technical Task Team and other regional stakeholders at a workshop in Johannesburg, South Africa, in May 2016.

The plan makes it clear that the challenge is not only to cope with shocks, but rather to shift from reactive to proactive approaches that reduce risk and vulnerability, before disaster strikes. The aim is to improve socioeconomic and environmental conditions so that communities affected by disasters not only "bounce

back" but "bounce forward." In this light, disaster risk management is a pathway to sustainable development, human welfare and well-being.

The Action Plan incorporates the best of current thinking about how the countries can cope with an increasingly warmer, drier, and changeable climate through an integrated approach that combines a range of measures, across sectors, which increase preparedness for response and recovery, and that strengthen resilience of the whole Limpopo system.

While mobilizing information for prediction and response to flood and drought is central to the plan, strengthening the entire framework of natural resources governance, as well as preservation and restoration of natural infrastructure, and recognition of local knowledge and practices that reinforce resilience, are also put forward as essential to its success. The plan recommends drawing on the natural communicative capacity of communities to participate in both preparation and warning systems.

Table 1: Interventions and actions recommended for LIMCOM's 2016 to 2020 Strategic Action Plan

INTERVENTIONS and ACTIONS	KEY POINTS
Priority Area 1: Understanding disaster risk	
• *Improve hazard forecasting*	Expand analysis/research activity and capacity; strengthen linkages between national, regional and international institutions with data/monitoring resources; increase/expand baseline information on key indicators.
• *Understand vulnerability/adaptive capacity for floods and droughts*	
• *Improve understanding of the impacts of water-related disasters on ecosystems in the Basin*	
• *Assess losses/damages from water-related disasters*	
• *Communicate water-related disaster risks and impacts*	
Priority Area 2: Strengthening disaster risk governance to manage disaster risk	
• *Clarify institutional mandates in disaster risk reduction*	Align frameworks/strategies at regional, transboundary, national levels; streamline roles and processes; foster multi-stakeholder engagement; improve communications between riparian states and with subnational bodies; strengthen evidence-based decision-making.
• *Improve communication amongst institutions at different levels*	
• *Promote policy harmonization*	
• *Develop transboundary disaster management cooperation framework within LIMCOM*	
• *Promote social inclusiveness in managing disasters*	
• *Strengthen integrated environmental governance in DRR*	

Priority Area 3: Investing in disaster risk reduction for resilience	
• *Prioritize DRR in the budgeting process*	Solidify financial commitments in national/regional budgets; incentivize individuals/private sector on zoning and disaster-smart investments; rehabilitate/maintain dams and water infrastructure; improve hydro-meteorological service and other technologies; maximize cross-sectoral cooperation through partnerships.
• *Promote the integration of DRR in financial mechanisms*	
• *Invest in best practices for land use and ecosystems protection*	
• *Invest in climate resilient infrastructure*	
• *Invest in better planning and practices in water-dependent sectors*	
• *Invest in better water and climate information systems and technologies*	
• *Promote community, public and private partnership in DRR*	
Priority Area 4: Enhancing disaster preparedness for effective response	
• *Develop an early warning system for disaster management and mitigation*	Develop system for public-oriented alerts; improve data collection systems and analysis; integrate indigenous leadership and experience in decision-making; maximize engagement of agriculture, eco-tourism, mining and other key sectors; specialize mapping in areas with high flood or drought risks, highlighting threats to infrastructure.
• *Integrate Indigenous Knowledge Systems*	
• *Develop anticipative Disaster Risk Reduction plans*	
• *Integrate Disaster Risk Reduction into sustainable development planning*	
• *Promote stakeholder engagement in planning for water-related disasters*	
• *Conduct flood and drought hazard mapping*	

2.3.2 Meeting the challenge of implementation

At the heart of the Action Plan are coordinated interventions at regional, transboundary, national and local level. LIMCOM's role is to help implement the plan and assist in coordinating actions by the four riparian governments, private sector, and civil society stakeholders. At the regional level, this Action Plan will fall under the auspices of the Water Division of the Southern Africa Development Community (SADC), with LIMCOM reporting on the Action Plan's implementation through bodies such as SADC's Water Resources Technical Committee. These bodies, with their established network and practices, will provide strategic guidance to the LIMCOM Secretariat.

The Action Plan's multi-sectoral approach recommends integrated and inclusive interventions to increase preparedness for response and recovery across the whole system. Implementation and coordination rests with LIMCOM, but a range of institutions and people are needed to drive the plan and ensure its success. Motivated by the collective ambition of stakeholders to improve resilience of the people and ecosystems of the Limpopo River Basin, the plan is linked to several success factors:

- Full implementation of LIMCOM structures, accompanied by requisite capacity building. This will enable LIMCOM to effectively fulfil its implementation and coordination role.
- Multi-sectoral, multi-stakeholder cooperation and partnerships, starting with LIMCOM's engagement of institutions mandated to deal with disasters. This requires LIMCOM to expand its scope beyond its current focus on water management.
- Ample, consistent financial resources from national governments and local and international partners, with a shift from financing disaster response to disaster planning and prevention. An Investment Plan in support of this Action Plan may be required to ensure this funding is well-coordinated and well-managed.

By including the priority actions from the Action Plan in the 2016 - 2020 LIMCOM Strategic Plan, also known as the LIMCOM Vision 2020 Plan, resources can be raised at various levels, either within the governments of the basin countries, or through LIMCOM implementing partners or International Cooperating Partners (ICPs). RESILIM is currently supporting the GWP-SA in development of training and knowledge products incorporating recommendations of the Action Plan, with a broader view to increase awareness about the Action Plan and easy access by targeted institutions to DRR knowledge and tools to aide the implementation process.

Figure 2 SASDIR conference

RESILIM shared the approaches applied in developing the plan, and lessons learnt, with regional disaster management practitioners and the international scientific community at the 2016 Southern Africa Society for Disaster Reduction conference (SASDiR), through a presentation titled 'A resilience-based approach to the development of the Limpopo River Basin Disaster Risk Reduction (DRR) Strategy and Action Plan - *Enhancing resilience to water-related disasters'*. The main lesson to the Conference was that a holistic approach to understanding and addressing disaster risks is a key pre-requisite for regional anticipative strategies that enhance resilience of livelihoods and ecosystems in the face of climate change.

While it may take some time to create these conditions so that LIMCOM can guide its member states in application of the Action Plan, participation of stakeholders in its development has built sustainability into the implementation process. Further, by incorporating the concepts of transboundary and ecosystems approaches into national and local planning, people and institutions in the basin should be better able to participate in the work of LIMCOM as the organization's capacity grows. RESILIM will actively seek LIMCOM's formal endorsement of the DRR Action Plan as part of the institutional capacity-building initiatives being implemented (see section 3.7).

2.3.3 Funding disaster preparedness: workshop about mobilizing resources in the SADC region

In Year Four, RESILIM attended a two-day SADC workshop on Regional Disaster Preparedness and Response Strategy and Fund Validation in Botswana. Participants from government, industry, civil society and academic institutions from southern Africa worked together to develop a draft strategy that outlines the actions that should be undertaken by SADC Secretariat and the stakeholders, while the fund translates those actions into resources terms.

The disaster strategy and fund initiatives are a new territory for SADC Secretariat and therefore there is need to take a cautious and measured approach. While there is recognition that SADC Secretariat should assume full responsibility for the disaster prevention, mitigation, preparedness, response and recovery in the region, these require immense resources that are not easily sourced, given that that the majority of SADC's Member States are low income developing countries. Thus, the major focus of the proposed strategy and fund is skewed towards coordination of preparedness, response and recovery and less on the actual provision of humanitarian relief, with the assumption that the Secretariat will gradually strengthen its capacity to address the outstanding issues over time.

SADC will, however, have to put in place a seed fund to kick-start the appeal process in the event a Member State is overwhelmed by a disaster beyond its capacity. This is an important issue for RESILIM, as formal adoption and implementation of the Limpopo Disaster Risk Reduction Action Plan depends on ample, consistent financial resources from national governments and local and international partners, with a shift from financing disaster response to disaster anticipation, planning and prevention.

1.2 Sharing transboundary water resources: generating data and information for sustainable use and management of the Ramotswa Aquifer

In a water-scarce basin, where all surface water has been allocated to various users who have increasing water demand, whilst rainfall is becoming more variable due to climate change, desperate local governments, businesses and communities are turning to subsurface water to meet their needs. There are three large aquifers in the Limpopo River Basin, all of which are transboundary. Their geographical extent, recharge rates and water quality are not fully known.

Produced 4 scientific studies/technical reports

Trained 40 stakeholders in water conservation and demand management

RESILIM has partnered with the International Water Management Institute (IWMI) to investigate the potential role of the Ramotswa Aquifer in adapting to climate variability, and in creating, through transboundary and local management, an enabling environment for preservation and enhancement of the resource and its associated ecosystems. Lessons learned during scientific and technical investigation of this important aquifer, which straddles the borders of South Africa and Botswana, can guide future research on the Limpopo Basin's other two transboundary aquifers.

Progress made in Year Four included socioeconomic and institutional assessment (Annex 3), creation of shared information resources, hydrogoelogical mapping (Annex 4), and training in harmonized monitoring and management of the aquifer.

1.2.1 Building and sharing knowledge about the aquifer

In Years Three and Four, IWMI and RESILIM brought together representatives from the Botswana government and members of the Joint Permanent Committee (JPTC) to engage key institutions in identifying and reviewing sources of existing knowledge about the aquifer. Two workshops drew participants from Botswana's Department of Water Affairs (DWA) and Department of Geological Survey (DGS), Water Utilities Corporation (WUC), University of Botswana, University of the Free State, Kalahari Conservation Society (KCS), Southern African Science Service Centre for Climate Change and Adaptive Land Management (SASSCAL), RESILIM, and USAID. Results from these workshops were incorporated in the development of the Ramotswa Information Management System (RIMS), a tool developed by the International Groundwater Resources Assessment Centre (IGRAC) in December 2015, for shared and harmonized monitoring and management of the groundwater resources of the Ramotswa Aquifer.

The RIMS was designed as a joint data and information management tool aligned with the two countries' national water resources management processes. Botswana's DWA and South Africa's Department of Water and Sanitation (DWS) are intended as the joint managers of the system. As the project moved from 2015 into 2016, the project partners continued to add new data. The RIMS will be internet-based and available to the general public for viewing and, as far as possible, downloading of data.

In January 2016, RESILIM and IWMI partnered with Exploration Resources International (XRI) to conduct research about the transboundary Ramotswa Aquifer. This involved a review of available data to identify conflicts and gaps that was then used for planning of an airborne electromagnetic investigation that captured data about hydrological and geological features below the surface of the earth. RESILIM was able to facilitate a demonstration of the XRI operation in Zeerust, close to the South African and Botswana border, for representatives from the South African DWS, Botswana DWA, the University of Botswana, and IWMI, before XRI completed the collection of data at the end of February 2016. XRI used the data collected to produce three-dimensional (3D) maps of the aquifer.

In February 2016, RESILIM, IWMI and IGRAC, together with the Universities of Botswana, Free State and Pretoria, hosted a three-day training workshop in Johannesburg about the conditions in and around the Ramotswa Aquifer area. The workshop focused on water supply, water resources and water-related constraints for livelihoods and development in the transboundary region. Information collected at the workshop was uploaded to the RIMS and the RIMS managers were trained on the main features and functionalities of the information system. The 39 participants included representatives from national organizations, municipalities, and non-government organizations, as well as students from universities, independent resource persons, and 11 project team members. This training workshop was the first meeting between South Africa and Botswana national partners, and it served as a platform for discussion on how to enhance transboundary cooperation on the Ramotswa Aquifer.

Participants also learned about the socio-economic, environmental and institutional context in the border region of the aquifer, and heard about the different options for improved resilience in the area, for instance through managed aquifer recharge. Another achievement was the harmonization of data and information sharing, through a training session carried out with the RIMS managers. At the end of the workshop, participants reported that they had an increased understanding of the project, its objectives, the approaches used, various technical concepts and the different roles of implementing partners, IWMI, USAID-RESILIM, XRI, IGRAC, the South Africa DWS and Botswana DWA.

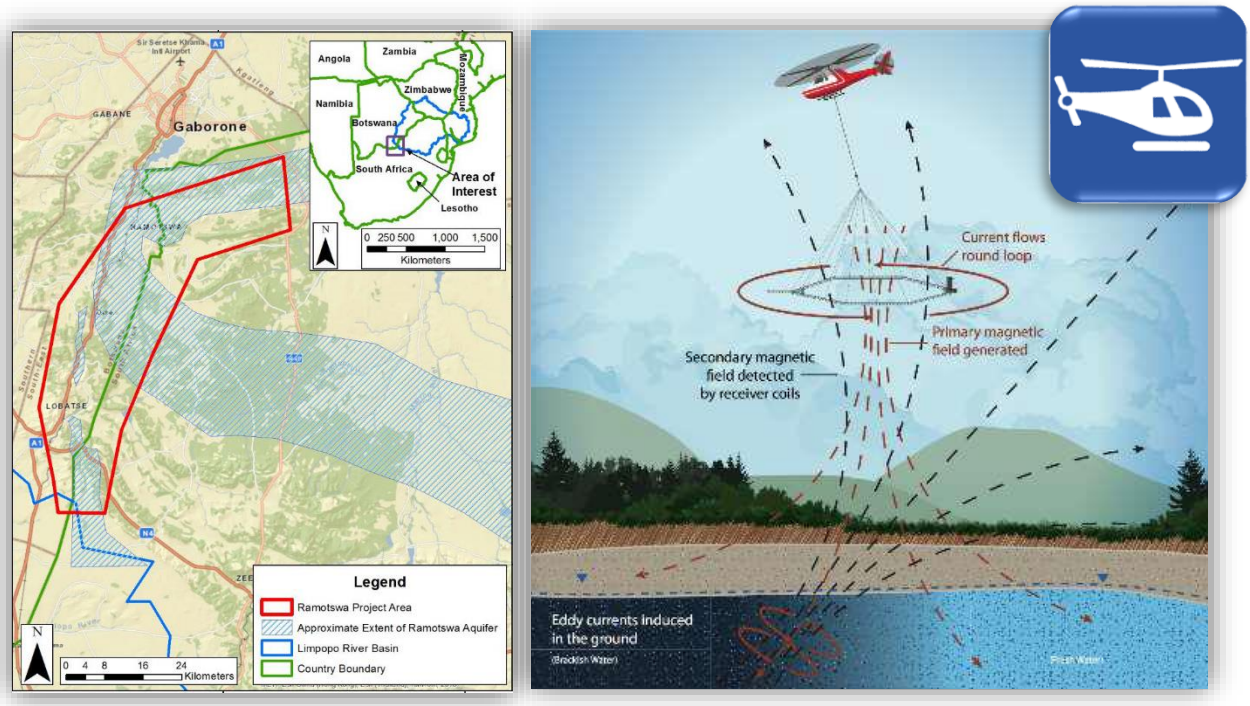


***Figure 2** (**left**): The Ramotswa project area and the transboundary Ramotswa aquifer, as part of the Limpopo River Basin. Gaborone, the capital of Botswana, lies just north of the study area. **Figure 3 (right):** Illustration of data acquisition for the airborne electromagnetic surveys.*

IWMI finalized an assessment of the environmental and socioeconomic conditions of the Ramotswa Aquifer area. This information, along with the data collected during the hydrogeological study, was collated and summarized in the RIMS - a first step towards building a Joint Strategic Action Plan with guidelines for better monitoring and future assessment of the aquifer. The findings included:

Water quality: The assessment found that that while the quality of the surface water in the Ramotswa Aquifer area is fairly good, the groundwater has been contaminated by human activities. For instance, nitrate concentration can be very high close to human settlements, due to contamination from pit latrines, the major sanitation system in South Africa.

Water use: Groundwater is used mostly for agricultural and domestic purposes, even though it is not suitable for household use due to the high levels of nitrate. Groundwater is thus mixed with water from other sources. It is mostly the rural population that depends on groundwater.

Climate-related impact on water source: Climatic data show that average annual rainfall is decreasing while the temperature and evaporation trends do not indicate significant changes. More spatial and temporal rainfall variations are expected, increasing the frequency and intensity of extreme weather events like droughts or floods. Climate change projections and future water requirements in the area are expected to increase the already existing water stress of the area.

Water transfers: The Botswana side of the aquifer area is extremely dependent on water transfer from outside the aquifer area. While there is also a deficit in the South African side, an international water transfer operates from the Molatedi Dam in South Africa to Botswana.

Socioeconomic conditions: In the Ramotswa Aquifer area, 82% of the population on the South African side lives in rural areas, while the corresponding proportion in Botswana is only 9%. The population growth in the Botswana sector is four times higher than in South Africa. The poverty rate is much higher in South African than in Botswana.

Policies and institutions: There are significant institutional challenges on both sides associated with implementation of policies and compliance on both sides. Institutions lack capacity to carry out their functions across multiple levels. Both Botswana and South Africa are in transitional phases with regard to water planning, management and regulation, making it difficult to identify clear functions and roles.

Knowledge gaps identified: There are various identified knowledge gaps, e.g. recharge and discharge mechanisms, aquifer storage capacity, and the role of the Ramotswa dolomite rocks, which form the base of the aquifer.

1.2.2 Strengthening technical management capacity

In September 2016, RESILIM together with its partners, IWMI, XRI and IGRAC, facilitated a training workshop in Mahikeng, South Africa, to further build the capacity of government, academia, civil society and private sector stakeholders from Botswana and South Africa to jointly manage the Ramotswa Aquifer in a sustainable manner. This workshop, which built on the first training that took place in February 2016, focused on data collection and assessment tools and techniques used by the technical teams during field work conducted since the first training workshop, the interpretation of raw data collected, and the development of models and tools for future scenario planning.

Over five days, more than 40 participants with different levels of knowledge and experience were trained in airborne electromagnetic (AEM) assessments, management of aquifer recharge, hydrogeological modeling, and institutional capacity self-assessment. Parallel sessions that focused on specific areas in greater detail were held for more technically qualified or interested trainees. The workshop further shared

and presented new information in the RIMS and participants provided suggestions to IGRAC for enhancement of the maps to include environment and livelihoods in the aquifer area.

1.2.3 Integration and Learning from Each Other: Launch of the SADC Ground Water Management Institute

RESILIM, together with USAID Southern Africa and its partners in the Ramotswa work, attended the launch of the SADC Groundwater Management Institute (GMI) on September 20 to 21, 2016 in Johannesburg, South Africa. The GMI will serve as a mechanism for implementing SADC's Sustainable Groundwater Management (SGWM) Program in SADC Member States. The institute is hosted by the University of the Free State in South Africa, a key stakeholder in the Ramotswa transboundary aquifer initiative.

The proceedings included presentations and discussions on the role and purpose of the SADC-GMI and the plan for the SADC Sustainable Groundwater Report, a position paper, to facilitate the review of the existing groundwater status in the Member States, and current groundwater activities in progress across the region, with input from the Member States as well as organizations working within SADC.

Notably, the key areas of the SADC-GMI's focus are in line with the objectives of the Ramotswa transboundary aquifer initiative as they include transboundary aquifer assessments, capacity-building, geographic information system (GIS) and database management, knowledge sharing, and mitigating the potential effects of climate change.

1.2.4 Laying the Foundation for the Process of Developing the Strategic Action Plan (SAP)

RESILIM's work to build understanding of the Ramotswa aquifer addresses a key need for knowledge to support sustainable water use in the region.

In Year Five, RESILIM will support the capture of data and information generated from the assessments carried out on the aquifer, and more targeted training of DWS South Africa and DWA Botswana to ensure skills exist within the two countries to effectively use the RIMS tool and its joint datasets. Building on the ongoing socioeconomic and environmental assessments initiated in Year Four, a final technical report on the hydrogeology of the Ramotswa area will be published, including a 3D model of the aquifer that will form the basis of future development scenario modeling beyond RESILIM's lifespan. RESILIM will begin the participatory processes to develop a Joint Strategic Action Plan to guide management of the aquifer by the two countries. Information developed through the socioeconomic and hydrogeological assessments will be used as base information for consideration by stakeholders, including validation at a regional workshop planned for November 2016.

RESILIM has planned for the sustainability of this important work through the facilitation of a direct partnership between IWMI and USAID Southern Africa.

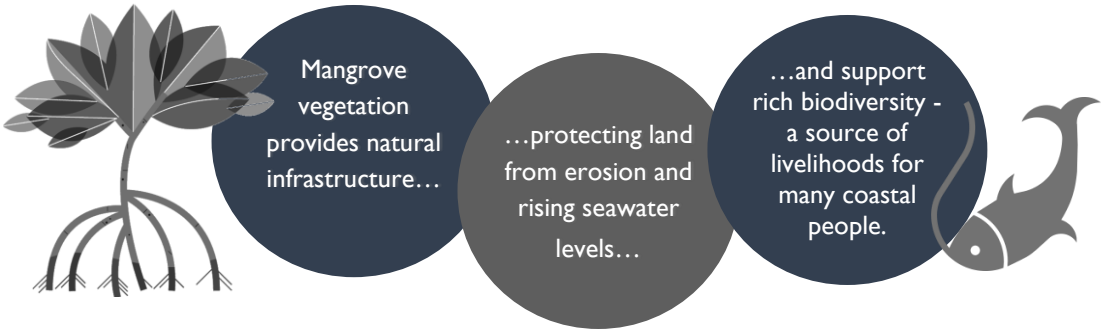
1.3 Restoring natural infrastructure: mangrove ecosystem conservation

Mangroves are disappearing all over the world, with between 20 and 35% of mangrove areas lost since 1980. In Mozambique, the expansion of aquaculture infrastructure; oil, gas and mineral prospecting; damming of major water courses that maintain the ecological balance of mangrove areas and coastal wetlands; unsustainable methods of fishing and overfishing; pollution from agriculture practices upstream; and ill-planned tourism facilities are the main causes of mangrove vegetation degradation. It is expected that in the future sea-level rise and flooding will be the biggest threat to mangrove ecosystems.

Replanted 74 hectares with mangrove seedlings

Developed teaching lessons on mangrove conservation, and other knowledge management products

The mangrove forests in the Limpopo River estuary have experienced accelerated deforestation, mainly due to over-harvesting, land clearing for agricultural purposes and damage caused by floods in 2000 from rising waters that deposited too much slit on the breathing roots of the trees. The Xai-Xai communities in the Limpopo River estuary rely on the marine ecosystem for food, income, and shelter. A rehabilitated and healthy mangrove ecosystem will significantly reduce the communities' vulnerability and improve their resilience to climate variability.



1.3.1 Investing in mangrove rehabilitation for climate resilience

RESILIM has been working with the Center for Sustainable Development of Coastal Zones (CDS-ZC) on their mangrove ecosystem restoration program in Xai-Xai. In Year Four, drawing on results of its economic and environmental valuation of the mangrove ecosystem in the Limpopo River estuary, RESILIM supported the production of additional knowledge products to serve training and awareness raising; facilitated the planting of trees in 74 hectares of degraded mangrove area; supported continued development of mangrove tree nursery; and negotiated support for an information resource center in the local community close to the replantation site and nursery for CDS-ZC.

RESILIM met with CDS-ZC in early June 2016 to assess the organization's capacity to implement a follow-on grant. The assessment showed that their capacity increased during the period of implementation of their first grant, and that the Center can internally manage a grant up to USAID's standards. RESILIM is proceeding with the development of a grant to conduct a second phase of activities with CDS-ZC.

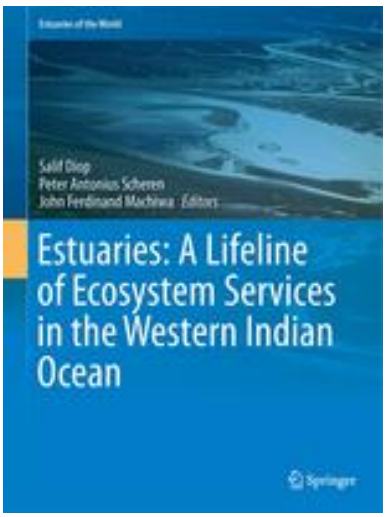


Figure 4: *Limpopo mangrove work mentioned in Doiop, Salif, Peter Scheren, and John Ferdinand Machiwa, eds. Springer, 2016.*

Under this follow-on grant, CDS-ZC and RESILIM will also continue to reforest mangroves to improve the health of the mangrove ecosystem and stabilize the banks of river estuary.

Also, the mangrove rehabilitation done in Xai-Xai, Mozambique by the CDS-ZC and RESILIM partnership features in a newly released technical book, "Estuaries: a Lifeline of Ecosystem Services in the Western Indian Ocean". USAID and RESILIM are acknowledged in the book for their support of rehabilitation efforts in the river estuary.

1.3.2 Setting Up a Community Information and Resource Center for Mangrove Conservation

As part of its second phase in the partnership with CDS-ZC, RESILIM will support the setting up of a Community Information and Resource Center for Mangrove Conservation. Since the start of the RESILIM and CDS-ZC partnership in 2014, CDS-ZC has become the focal point in Mozambique for learning in mangrove conservation. The Eduardo Mondlane University (UEM) in Maputo takes students to the mangrove replantation site and nursery in Xai-Xai. An information and resource center will support visiting students and others to share and learn lessons and methods of mangrove conservation.

"I brought students to the replantation site after I witnessed the success from the restoration project with USAID RESILIM's support. The upgraded nursery, and the success from the replanting, and the community participation brought the PASA* initiative support from the Government of Mozambique".

~ Salomão Bandeira,
Eduardo Mondlane University,
Mozambique

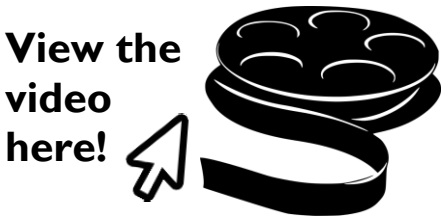
* Programa de Apoio para o Sector do Ambiente" (Programme for the Environmental Sector)

Figure 5*: Augostinho Nhanzimo, head of community mangrove nursery, explains the process involved in cultivating mangrove seedlings for replantation to UEM students.*

The resource centre will be stocked with the relevant environmental assessments, evaluations and other materials such as teaching lessons that were designed during the first phase of the RESILIM-CDS-ZC partnership, including a video RESILIM produced as part of the Resilience Video Series[1].

[1] https://vimeo.com/179154207

To work towards sustainability of initiated mangrove conservation initiatives, RESILIM will continue in Year Five to provide training to CDS-ZC technical staff to improve skills in resources mobilization, with specific focus on mangrove conservation in the Limpopo estuary. Part of the training will involve development of funding proposals for possible submission to the Global Environment Facility (GEF), targeting the program's biodiversity, climate change and international waters funding windows. This forms part of RESILIM's strategy for consolidation by building institutional capacity to ensure the sustainability of resilience building initiatives.



2. Component 2: Conservation and management of ecosystems improved

2.1 Building resilient protected areas in the Limpopo River Basin

The Limpopo River Basin has one of the highest percentages of protected areas in southern Africa. It is home to the Great Limpopo Transfrontier Conservation Area (GLTFCA) and the Greater Mapungubwe Transfrontier Conservation Area (TFCA), including other protected areas such as the Waterberg biosphere, the Pilanesberg and Madikwe reserves, and other private game farms in South Africa; the Matopos National Park in Zimbabwe; and Banhine National Park in Mozambique.

Community interests and rights in the management of parks are still not being adequately taken into consideration – and the more communities are excluded, the less resilient ecosystems and protected areas will be. For example, in the mitigation of threats to biodiversity such as certain wildlife species such as rhino, elephant, and lion, communities are still fighting to be recognized as "the first line of defense" against poachers.

In Year Four, RESILIM completed the integrated livelihoods diversification strategy for the GLTFCA (Annex 5), and worked to develop an integrated conservation and development framework for the Pafuri/Sengwe Node (Annex 6), an area recognized as both a GLTFCA Community Development Node and an area of high vulnerability to climate change in RESILIM's Risk and Vulnerability Assessment of the Basin, as well as a cross-boundary focal point where three countries of the Basin have an interest.

2.1.1 A livelihoods diversification strategy for the GLTFCA Integrated Livelihoods Diversification Strategy for the GLTFCA

More than 2.5 million people live in the buffer zone of the GLTFCA. The Great Limpopo Transfrontier Park (GLTP) was established through an international treaty that was signed by the Heads of States for Mozambique, South Africa and Zimbabwe at Xai-Xai, Mozambique in December 2002.

Developed a Livelihoods Diversification Strategy

Communities near the park are characterized by unemployment, high levels of poverty, and dependence on handouts from government or rain-fed agriculture. These communities are extremely vulnerable to the impacts of climate change such as floods and droughts, and the majority do not see tangible benefits from the conservation efforts of the GLTP. RESILIM partnered with the Peace Parks Foundation (PPF) in Year Three to develop an integrated livelihoods diversification strategy that aims to ensure communities derive benefits from protected areas, increasing their resilience to climate change.

Developed an Integrated Conservation and Development Framework

In Year Four, RESILIM completed the alternative livelihoods strategy, including a climate change scenario planning exercise. Approved by the Joint Management Board of the GLTFCA, the strategy is now being rolled out by the GLTFCA with a geographic focus on its particular transboundary nodes. The first node is the Pafuri Node where RESILIM supported the creation of a draft Integrated Conservation and Development Framework.

The process of developing the strategy and framework was highly participatory. Throughout 2016 RESILIM and the PPF continued to engage key stakeholders through meetings and transboundary workshops to gather input for the development of the strategy and secure support for the development of the integrated conservation and development framework (ICDF) for the Pafuri Node.

Figure 6: *Ecotourism experts and members of the Malipati Community Development Trust discuss various livelihoods opportunities and options in the Sengwe-Tshipise Corridor.*

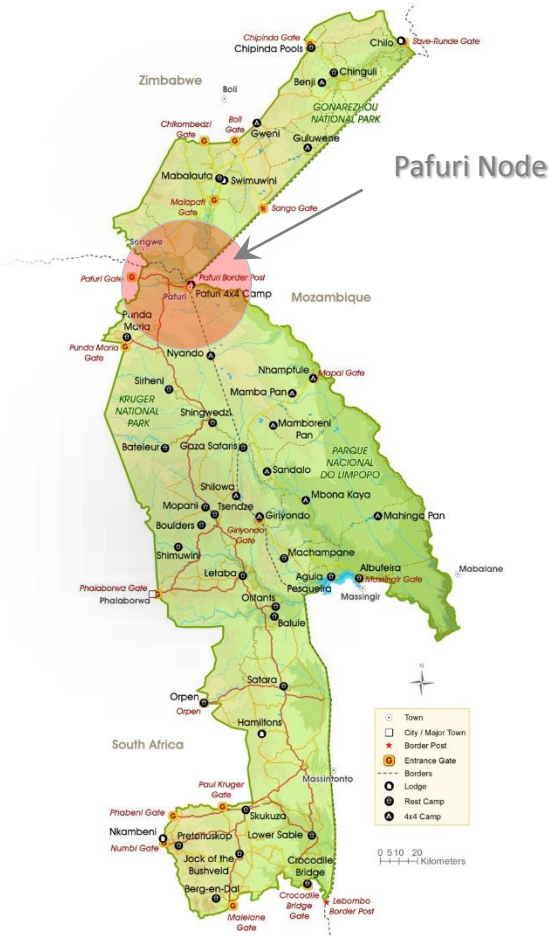


Figure 7*: The Great Limpopo Transfrontier Park.*

Stakeholder engagements included a meeting with private sector ecotourism operators in the Pafuri region and a meeting of the stakeholders from the Kruger National Park buffer zone and the broader GLTFCA, as well as the Limpopo Department of Economic Development, Environment and Tourism (LEDET) where progress in development of the strategy for the GLTFCA was shared. RESILIM's participation in the latter meeting also ensured that other projects such as the Mopani Bioregional plan, the Ehlanzeni Bioregional plan and the GEF Protected Areas program are aligned with the development to the GLTFCA livelihoods diversification strategy. Two regional workshops were hosted in Maputo, Mozambique and Harare, Zimbabwe respectively.

Ecotourism was identified through the stakeholder workshops as a climate change adaptation strategy that will not only conserve biodiversity, but provide communities with an alternative livelihood directly linked to conservation. Ecotourism will build community support for conservation and be more resilient than rain-fed agriculture. The process looked at tourism options in the Sengwe corridor community land that links Gonarezhou to the Kruger National Park - as well as existing tourism infrastructure in the Makuleke region of the Park.

PPF and RESILIM hosted a regional stakeholder workshop at the Mopani Rest Camp in the Kruger National Park in March 2016 to solicit the final input on the strategy and commence with the development of the ICDF for the Pafuri Node.

Used by the GLTFCA stakeholders when working in the community areas adjacent to the protected areas, the strategy will serve as a baseline and justification for funding proposals and plans, and guide implementation of an integrated approach to community beneficiation. This process will be coordinated by national implementing agencies, with the support of other key stakeholders.

Moving to Year Five, RESILIM, in partnership with PPF, will inaugurate and build capacity of the Pafuri Joint Parks Management Committee (JPMC)[2], and organize a workshop and presentation on the GLTFCA process and outcomes for the Mapungubwe Joint Management Board (JMB) with a view to sharing lessons from the previous work to catalyze action in the Mapungubwe.

The experience gained in preparing the livelihoods strategy and the integrated vision and plan for the Pafuri Node will be useful in RESILIM's further work to build sustained capacity in management of protected areas.

2.1.2 Development of a new rural livelihood or resilience training center

In September 2016, RESILIM participated in a site visit and stakeholders workshop at the Tshikondeni Mine in the Pafuri Node, to give input on an intended legacy project proposed by Exxaro and Arcelor Mittal South Africa (AMSA), two mining companies, in partnership with the Makuya Community, with the support of two partners of RESILIM, PPF and the Southern African Wildlife College (SAWC). The draft proposal includes the development of a range of compatible land uses on parts of the current mine area, including ecotourism, hunting, wildlife breeding and the development of a northern campus for the SAWC, which will prioritize building the capacity of the local community with a focus on alternative livelihoods to improve rural community resilience.

The Tshikondeni Mine falls within the Pafuri/Sengwe Node identified in the GLTFCA Livelihoods Diversification Strategy as a pilot area for the implementation of the strategy. The Integrated Conservation Development Framework (ICDF) developed for this node includes this legacy project as a key initiative to support the objectives of the plan relating to the protection and restoration of natural resources; maximizing local community benefits; supporting access to alternative livelihood options; and increasing community governance capacity. RESILIM's role and interest in this development is to ensure that, its partner, the SAWC is able to offer the courses RESILIM developed with them in Year Three and to see to it that the ICDF is part of the ongoing plans. RESILIM is not in the forefront here, and the center, once established, will not be a USAID or RESILIM branded center.

[2] The Pafuri Joint Parks Management Committee (JPMC) was created to devolve management decisions and create more implementation capacity in the region

2.1.3 Sharing Lessons through Resilience Video Series

RESILIM produced the second video of the Resilience Video Series: *The Development of a Livelihoods Diversification Strategy for the GLTFCA.* The purpose of the video series is to educate, inform and raise awareness about climate change and interventions that can build the resilience of people and ecosystems to the impacts of climate change. The video serves as a simplified introduction to the complex methodology adopted to develop the livelihoods strategy, methodology that can be adapted and scaled up to other protected areas in the basin and beyond.

View the video here!

2.2 Strengthening Capacity to Conserve biodiversity through Combating Wildlife Crime

Globally, wildlife and forest crime has transformed into one of the largest transnational organized criminal activities alongside trafficking in drugs, arms and human beings. This does not only have a disastrous impact on the world's biodiversity, but it also deprives developing economies of billions of dollars in lost revenue.

Increased capacity 33 prosecutors and magistrates with regards to addressing wildlife crime

2.2.1 Legal training in prosecuting wildlife crime

In Year Four, RESILIM, together with the United Nations Office on Drugs and Crime (UNODC) supported the U.S. Department of Justice (DOJ) with a four-day regional training workshop in Zambia to build the capacity of prosecutors and magistrates to investigate, prosecute, and preside over cases that involve illegally taken and trafficked wildlife and fish.

The 33 trainees included prosecutors and judges from Angola, Botswana, Malawi, Mozambique, Namibia, and Zambia. The workshop served a dual purpose by meeting DOJ's objective of building capacity globally to address wildlife crime, and meeting RESILIM's objective of building the capacity of government officials to mitigate threats to biodiversity such as poaching and wildlife trafficking.

Figure 8: *Mr. Stephen Mwansa, Zambia Permanent Secretary for Tourism and Arts; Mr. Kule Chitepo, RESILIM Chief of Party; and Mr. Eric Schultz, U.S. Ambassador to Zambia.*

Building on the success of the workshop, a second workshop took place with a focus on West and Central Africa, led by the USAID Southern Africa Regional Environment Program (SAREP), RESILIM's sister program implemented in the Cubango-Okavango river basin.

This work complements RESILIM's work on diversifying livelihoods in the GLTFCA protected area, where poaching has become a significant problem, as well as RESILIM's contribution to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) 17th Conference of Parties (CoP) meeting held in September and October 2016, its training work with the Southern African Wildlife College, and the Rhino Conservation Lab.

Building this capacity for prosecutors and magistrates to understand their legal options has also provided the opportunity to feed their understanding of local livelihood needs and practices back to the RESILIM program, a cross-fertilization process that can lead to innovative and sustainable solutions to a challenging problem.

2.3 Conservation lessons from the Limpopo shared with the world

While the geographic focus of RESILIM's work has been the southern African region, many lessons learned from the program are relevant to other regions that are facing similar challenges to natural resources management and climate change. In Year Four, RESILIM used the opportunity presented by two major international meetings related to biodiversity, and an invitation from the media, to share some of the rich experience it has gained in the past three years in the Limpopo River Basin. Through these, RESILIM was able to highlight the importance of acknowledging the relationships among biodiversity conservation, livelihoods, and water resources management, to sustainable development.

Shared lessons learned at two major international biodiversity events

2.3.1 Participation in the IUCN World Conservation Congress

The International Union for the Conservation of Nature (IUCN) World Conservation Congress (WCC), which takes place every four years, is the IUCN's highest decision-making body and influences nature conservation worldwide. Every WCC develops a Declaration and Program that guides the planning and operations of the IUCN global and regional offices, as well as its members, to resolve the world's most pressing conservation and development challenges.

In partnership with the IUCN, the RESILIM and SAREP hosted a Southern Africa World Conservation Congress Preparatory Meeting in Johannesburg, South Africa in May 2016. At the workshop, participants discussed critical threats to biodiversity and challenges in sustainable development in the region and agreed on a concrete set of actionable recommendations and aspirations that were later presented to the southern Africa regional IUCN office and its membership, in preparation for the WCC

Figure 9: *Steve Johnson, SAREP Chief of Party, takes the participants through an exercise to capture recommendations from the group to the IUCN Regional Office in preparation for the 2016 World Conservation Congress.*

The Southern Africa membership of IUCN expressed the need for increased cohesiveness between the East and Southern Africa IUCN members, as both sub-regions face similar conservation and development challenges ranging from wildlife crimes to environmental degradation. The members requested efficient communication in the region to increase knowledge of the various members of IUCN, thus promoting effective networking and collaboration. Finally, the members called for the direct coordination of the group and the involvement of the Secretariat, through the regional office, in establishing a knowledge sharing platform that would give the group greater visibility and power to influence decision-making.

RESILIM Chief of Party, Kule Chitepo, and Biodiversity Activities Manager, Steve Collins, attended the congress in Honolulu Hawaii, September 1 to 5, 2016. At the Water Pavilion, RESILIM and SAREP co-presented on their programmatic experiences and lessons learned in improving socioecological resilience within the Okavango and Limpopo River basins. Informal discussions on collective conservation initiatives continued at the joint RESILIM, SAREP, and Southern Africa IUCN exhibition stand, which was also used as a meeting and networking point to share and showcase further experiences in building resilience in the river basins.

At the exhibition stand, SAREP and RESILIM distributed some 200 DVD/CDs containing program reports, fact sheets and instructional media that were well received by the delegates. USAID, which had separate exhibition space, also distributed the DVD/CDs at their stand to showcase work implemented by USAID in southern Africa.

At another presentation, RESILIM, SAREP, PPF and SAWC, collaborated with Russian transboundary conservationists, and the North American Inter-Governmental Committee on Cooperation for Wilderness & Protected Areas Conservation (NAWPA Committee) to host a session to explore the commonalities of transboundary protected area management in their respective regions. Participants further discussed the benefits of transboundary conservation initiatives, as well as the constraints facing Transfrontier Conservation Area (TFCA) management across the three different continents. RESILIM took the opportunity to showcase the Livelihoods Diversification Strategy of the GLTFCA, which the program supported to develop in partnership with PPF and the GLTP.

The RESILIM Chief of Party worked closely with the SAREP Chief of Party and supported "Africa Rising", a theatre group from southern Africa, to develop and produce a play to display at the WCC. The play calls for the governments of southern Africa to stand for the principles of sustainable use of natural resources, especially wildlife, which will incentivize communities to protect and conserve their surrounding wildlife. The performance was recorded in South Africa and screened to a large audience at the Water Pavilion.

Also, through the Southern African Resilience Alliance (SARA), a group established with the support of RESILIM in 2015, RESILIM and SAREP encouraged one of its members, Jennifer-Mahomed Katerere, to stand as a candidate for the position of one of the IUCN Commissioners for Africa. She was successfully elected at the WCC and will represent southern Africa interests at the highest global conservation level.

2.3.2 **Bringing the community voice to the CITES CoP17**

RESILIM, in collaboration with the SADC TFCA network, participated in CITES CoP17 that was held September 25 to October 6, 2016, in Johannesburg, South Africa. The CITES CoP takes place every three years to ensure that trade in wildlife products does not threaten survival of species in the wild.

The SADC TFCA network shares lessons via the internet and highlights the work of cross-boundary conservation areas, including RESILIM's work in the GLTFCA, which was presented at the CoP17 through an exhibition space and several side events. RESILIM coordinated one of these side events which focused on community engagement and the economic potential of TFCAs and included a hard-hitting theatrical piece by the same group that was so well received at the WCC. In this case the "Africa Rising" focused on the implications of the illegal wildlife trade and sustainable use of natural resources by rural communities. The event was attended by around 120 decision makers and was addressed by Ms. Barbara Thomson, the South African Deputy Minister of Environmental Affairs.

Following their impactful performance, "Africa Rising" were requested to perform at two other events, at the request of the organizers, the "Common Ground Common Future - Community Voices at CITES" workshop, and the "Governance of SADC TFCAs" side event which will include the launch of the SADC TFCA network portal. RESILIM's support of the theatre group and participation in these events contributed to increasing calls for more official engagement of CITES processes with the communities that live, and bear the cost of living, close to wildlife.

2.3.3 Talk Africa Panel about climate change impacts

RESILIM recognizes that to build climate resilience in the basin, broader society needs to be aware of the various challenges faced in the Basin, what can be expected in terms of climate projections, and what opportunities exist for building climate resilience in the Basin. RESILIM regularly engages mass media as a means to reach a large audience that extends outside of the catchment, encourages debate and conversations around climate – related issues, and promotes resilience-building initiatives.

***Figure 10**: Steve Collins, RESILIM Biodiversity Activities on Talk Africa on China Central Television.*

In October 2015, RESILIM's Biodiversity Activities Manager Steve Collins participated in a panel discussion on the impacts of climate change on livelihoods and food security in Africa on the program *Talk Africa* on China Central Television (CCTV) Africa. Mr. Collins contributed to the panel discussion by raising awareness on the impacts of climate change on communities, and how communities are attempting to adapt to droughts and flash floods. Mr. Collins also stressed the critical need for countries, such as the riparian countries of the Limpopo River Basin, to improve the transboundary management of water resources for the benefit of the people and ecosystems in all the countries, and to develop economies where biodiversity conservation is as important as food production, as many communities' livelihoods depend on natural resources.

2.4 Protecting a precious water source: building resilience in the Marico Catchment

The Marico Catchment is found within the borders of South Africa's North West Province. The North West Province is poorly conserved with less than 2% of the land under formal protection. This does not meet the Department of Environmental Affairs' targets within the National Protected Area Expansion Strategy. Threats to biodiversity in the North West includes poor land use practices, mining, agriculture and other economic-driven developments.

Supported the submission of application for a protected area

The Marico River is the lifeblood of the Marico Catchment. The river is one of the very few unmodified and natural rivers in South Africa, and it supplies pristine water to an extensive crop and cattle industry, while farm households and rural communities derive their drinking and household water directly from the river. The Molatedi Dam, which is fed by the Marico River, is the sole supplier of water to the Madikwe Game Reserve, the fifth largest game reserve in South Africa. Protection of this water source, and the ecosystems in the surrounding area, is thus essential for the climate-resilience of the Marico and downstream catchments.

Supported formalization of a river health program – training, water quality testing, and identification of invasive plant species.

The Marico River Conservation Association (MRCA) is a rural community-based organization that implements biodiversity conservation and sustainable development efforts in the upper reaches of the Marico River. In program Years Three and Four, RESILIM worked closely with the MRCA to build the capacity of the institution, support establishment of a firefighting unit for the area, strengthen the capacity of MRCA conservation project managers, conduct river health monitoring, and raise the awareness of climate change and the importance of biodiversity and water conservation among youth and the broader community.

In Year Four, RESILIM supported the MRCA and the North West Provincial Rural, Environment and Agricultural Development Department (READ) to work towards establishing the Marico Biosphere Reserve for improved management by landowners of an area that is part of a high altitude catchment and of high biological significance.

2.4.1 **Creation of a Groot Marico Biosphere Reserve**

In February 2016, the Member of the Executive Council (MEC) of the North West Province of South Africa, also known as the provincial government's cabinet, gazetted its intention to declare about 19 000 hectares in Groot Marico as a protected area. If established as a protected area, the 19 000 hectares will serve as the core area of a proposed 60 000 hectare UNESCO-recognized Marico Biosphere Reserve. RESILIM is supporting the MRCA to establish this Marico Biosphere Reserve for improved management by landowners of an area that is of biological significance.

More than 30 landowners agreed to have their land zoned as conservation land indefinitely and to manage their land according to a management plan. They will work with an appointed management authority appointed by the North West Parks Board under the rules and regulations of the UNESCO Man and Biosphere program. The proposed land use allows for organic farming, and the area is suited to game breeding and ecotourism. There are plans to relocate game from over-stocked provincial reserves and for some farmers to drop fences to allow for freer movement of animals and tourists. Drafting of management plans for each of the farms is ongoing.

With this work, as in its support for the Nylsvley wetland (see section 2.8 for additional detail), RESILIM is gaining, and sharing, valuable experience in supporting the incorporation of protected areas into sustainable local community development.

2.4.2 **Monitoring river health in the Marico Catchment**

RESILIM also supported MRCA to formalize the South African River Health Program (RHP) in the Marico Catchment. Two MRCA employees were trained to conduct the sampling and monitoring as per the RHP and over the period of January to March 2016, carried out river health monitoring and water quality testing at five sampling sites. This information was used to establish a baseline that would inform interventions for protecting the Marico River as a pristine water source of the Limpopo River Basin.

Laboratory results from two samplings indicated that the river was in fair condition and the water safe for human consumption. The second sampling, however, had high levels of sedimentation due to erosion caused by agricultural activities. Also, with no or little vegetation in some areas of the river catchment due to wildfires in November 2015, heavy rains caused further erosion and sediment loads in the water runoff. Minimal invasive flora was recorded at some of the sampling points, while a higher density of alien plants were found in areas with lower river health conditions. These areas were also close to agriculture

activities and human settlements. The MRCA subsequently removed these invasive plant species from the river banks.

Formalization of the RHP program also contributed to other areas of the MRCA-RESILIM partnership and beyond. The results from the monitoring serves as the baseline for the pre-biosphere declaration study which is necessary for the creation of the Marico Biosphere Reserve. Furthermore, the data generated informs discussion with land owners near the river about the status of water quality and interventions for improved river management.
Building MRCA's capacity to generate data and information to inform resilience building initiatives falls within RESILIM's strategy to improve the capacity of institutions to generate credible data and information for adaptive decision-making, and to accelerate stakeholder buy-in. Additionally, the information placed MRCA in a position to assist in the facilitation of the reconciliation process between local municipality, residents and the contractors of the sewerage plant, leading to the finalization of the sewerage plant plans and the beginning of the plant's construction.

2.5 Planning for multiple sustainable land use: support to the Man and the Biosphere Program

The United Nations Man and the Biosphere Program (MaB) is an intergovernmental program with the purpose to establish a scientific basis for the improvement of relationships between people and their environments. MaB has established a global network of reserves that aim to achieve the interconnected functions of conservation, development, and logistic support through establishing land use zones that are managed with a multi-stakeholder approach.

Recognizing that such an approach might be suitable for important high altitude catchments in the Limpopo River Basin, RESILIM formed a partnership with the South Africa DEA to participate in strategic support of the MaB initiatives in SA and the LRB at large. RESILIM is working with DEA to increase capacities of biosphere committees in leadership and governance, data and information management systems, guidelines for mining in biospheres, land use planning and zoning, RESILIM's work with MaB is building an enabling environment for civil society and government to create resilient landscapes through ecosystem based development planning and decisions.

2.5.1 Placing the protection of high altitude catchment areas on the biodiversity conservation agenda

The RESILIM Risk and Vulnerability Assessment found that areas where water is plentiful, biodiversity thrives. Where biodiversity is intact, water tends to be of high quality. Areas that have the highest biodiversity and levels of endemism are also those of high-altitude areas with the highest rainfall and water runoff, producing up to 100 times more water than lower lying areas.

Nearly all of the high altitude catchments in the Limpopo River Basin are located within biosphere reserves. These biospheres are characterized by high biodiversity, making them biologically significant areas in the basin. Some, such as the Soutpansberg, the Waterberg, and the Wolkberg, are part of biospheres reserve in South Africa. It is therefore crucial to secure these areas for future water generation and the protection of biodiversity. The protection and conservation of biodiversity will secure sustainable runoff from these regions. There is a need to build the capacity of government and civil society institutions already involved in the long-term protection and rehabilitation of these vital water producing areas.

In Year Four RESILIM supported participation of 12 biosphere delegates at the South African DEA annual MaB committee meeting in Pretoria, South Africa. Representatives from the biospheres, including the planned Marico Biosphere Reserve, the DWS, Department of Mineral Resources, UNESCO representatives and others received feedback on the recently completed 2016 – 2020 South African MaB strategy.

***Figure 11**: The Waterberg mountain range in the Limpopo Province, South Africa, is a "water tower" or high altitude catchment area in the Limpopo River. Areas as such, play a vital part in the water producing functionality of the basin as it produces up to 100 times more water than lower-lying areas.*

2.5.2 **Man and Biosphere Information Hub Stakeholders Workshop**

On June 2, 2016 RESILIM facilitated a brainstorming workshop with representatives of the South African DEA, the Council for Scientific and Industrial Research (CSIR), the South African National Biodiversity Institute (SANBI), the Endangered Wildlife Trust (EWT) and others to discuss the development of an information sharing system for biosphere or other landscape organizations. The workshop input was compiled into a concept document for a Biosphere Landuse Information Sharing System (BLISS), presented at a MaB Committee meeting later in June. In order to avoid duplication with a similar system already initiated by a MaB structure in the Western Cape, it was resolved that a single platform, the BLISS, developed with support from RESILIM and its partners, would benefit all of South Africa's biospheres. RESILIM facilitated a task team meeting with select participants in early July 2016, in partnership with the Kruger to Canyons (K2C) biosphere committee, which has developed a way forward and is in the process of developing a pilot Biosphere Information Sharing and Management System.

2.5.3 Man and Biosphere Capacity Building and Training Workshop

RESILIM supported DEA to host a MaB Capacity Building and Training workshop on June 28, 2016, which focused on mining in biosphere reserves. Mining was identified in the RESILIM Risk and Vulnerability Assessment as one of the major threats to quality and quantity of water and biodiversity in the important water producing areas covered by biosphere reserves. The workshop was well attended by the MaB committees, national, provincial government, Chamber of Mines, mining companies, EWT, Wildlife and Environmental Society of South Africa (WESSA) and IUCN. Presentations included South African and SADC mining and biodiversity guidelines, as well as a case study on plans for minimizing environmental impact in a new mine development in Elandsfontein within a biosphere and over an aquifer.

DEA was asked by UNESCO and the African Man and the Biosphere Network (AFRIMAB) to support the participation of neighboring countries' biosphere programs which are still at an early stage of implementation. RESILIM supported the participation of Mozambique and Zimbabwe's National MaB committees to build their capacity to drive their own country processes of setting up biospheres. No representative from Botswana could attend.

2.5.4 Agreement on feasibility of a Biosphere Land Use Information Sharing System

Supported the development of an information management app concept

In July 2016, RESILIM organized and facilitated a meeting with the DEA, the K2C Biosphere Reserve, and local South African stakeholders, to further develop the idea of a BLISS. RESILIM and the DEA successfully solicited the needed buy-in and there was agreement that, implementation of a BLISS would increase the capacities of the different role players involved in biosphere management to better share information for improved decision making. A task team was formed and a first set of actions were outlined, which includes development of a work plan, setting up a budget and leveraging funds and resources to implement this pilot project at K2C.

The task team members confirmed that the objectives of BLISS are to:

a) Facilitate easy two-way communication between biosphere committees/decision makers and on-the-ground stakeholders through computers, phones and tablets;
b) Enable real time environmental monitoring, including land use changes, environmental threats, and improvements or reduction of water flows, which can then be dealt with by MaB members through relevant authorities;
c) Enable users to access maps, management plans and useful biosphere related resources;
d) Enable users to learn from other biosphere reserves and resources by facilitating remote evaluation and electronic learning; and
e) Facilitate research in the biosphere and become a resource center with useful and accessible research.

Notably, the task team members agreed that the concept of a smart phone application (APP), linked to a biosphere website as well as a data management server at SAWC, was feasible. The first working model of the information system will be created in the Kruger 2 Canyons Biosphere region. Hopefully, once it is shown to work by the end of March 2017, DEA and the South African National Man and Biosphere committee will roll it out to the other Man and Biosphere committees in South Africa and introduce the system to the neighboring countries it is assisting to set up biosphere reserves. There are currently 4

UNESCO recognized biosphere reserves in the Limpopo basin portion of South Africa covering a total of 6 373 570 hectares.

The information management system is being piloted with the K2C Biosphere Reserve as it has the largest online presence and has the most capacity of all the biosphere reserves in the region to manage an online information platform. In addition, there is an existing database management system in place at the SAWC to which the K2C will link, and also receive training on how to use mobile phone data gathering systems. Building upon the workshop organized by DEA South Africa on mining and biospheres, RESILIM will continue to assist the South African MaB committee to develop guidelines for how mining in biosphere reserves should take place. MaB committee members from the other riparian countries, Botswana, Mozambique and Zimbabwe will be invited to participate in the stakeholder workshops that will feed into the development of the guidelines. Once in place, the guidelines will be presented to the AfriMAB and UNESCO MaB Committee for endorsement.

In Year Five, RESILIM will continue supporting DEA South Africa to create the BLISS. The system will be set up with the K2C biosphere region, and will integrate with existing information systems such as those managed by the SAWC and the K2C.

2.6 Cooperating to improve water quality: control of the invasive water hyacinth plant

Water hyacinth flourishes in the nutrient rich and polluted parts of the Limpopo River and its tributaries. The invasive weed has become a nuisance in some areas of the Basin where fishing is being disrupted and fish stocks have reduced due to the plant depleting the oxygen in the water. Water hyacinth also clogs and damages irrigation pipes. The presence of water hyacinth is usually an indication of poor water quality and poses a threat to indigenous biodiversity and the health of ecosystems at large, as well as community livelihoods.

Figure 12: *High-walled weir infested with the water hyacinth downstream of Lephalale.*

Transboundary integrated water resource management issues in the Upper Limpopo are coordinated through the Joint Permanent Technical Committee (JPTC) set up under a bilateral agreement between Botswana and South Africa. The JPTC established a sub-technical committee on water quality and aquatic alien invasive species management, and RESILIM has been providing support to this committee since RESILIM's second year of operation.

In Year Four, RESILIM assisted the JPTC with a communications plan (Annex 7), finalization of a Memorandum of Understanding (MOU) between the two countries (Annex 8), initiation of a water quality and invasive weed joint monitoring program, and participation in various strategic meetings such as the South African DEA inter-provincial aquatic planning meeting in Polokwane, South Africa.

2.6.1 Strengthening the capacity of the Joint Permanent Technical Committee Task Team on Water Quality and Water Hyacinth

In April 2016, the sub-technical committee, with support from RESILIM, was able to review and ratify its joint action plan at a two-day workshop in Bela-Bela, South Africa.

Implementation of the joint action plan is ongoing. For example, RESILIM, together with communications expert, Erin Martin from Overseas Strategic Consulting (OSC), a RESILIM consortium partner, assisted the committee with the development of a communications plan. The purpose of the plan is to improve internal communication among committee members for the better coordination and sharing of information. This is in response to operational challenges identified by the committee at the meeting, such as organizing of meetings and sharing of data and information between the countries.

The committee also planned for activities that allow for better external communication with the JPTC's stakeholders, such as commercial farmers and other water users. With guidance from OSC, the committee mapped their stakeholders, developed key messages for different audiences, and identified key vehicles for delivering the messages which would inform the committee's communication plan. Focal points of the technical team are further revising the strategy.

Through RESILIM and USAID guidance to LIMCOM, the workshop was chaired for the first time by the South Africa DWS Chief Director of Transboundary Water Resources and LIMCOM Commissioner, Ms. Duduzile Twayi. The presence and participation of a LIMCOM Commissioner in a JPTC meeting was a way to ensure LIMCOM's vested interest and buy-in to transboundary integrated water resources management.

2.6.2 Invasive species session at Africa Water Week

The 6th Africa Water Week, organized by the African Ministers Council on Water (AMCOW) in conjunction with the African Union Commission, took place July 18 to 22, 2016 in Dar es Salaam, Tanzania. On July 21, RESILIM, together with IUCN, the United Nations Environment Program (UNEP); and (GWP-SA, convened a technical session, *Challenges and opportunities in managing and controlling the spread of invasive Prosopis in dryland ecosystems in transboundary river basins*. RESILIM shared lessons learned with the JPTC in the management of water hyacinth in the LRB.

2.6.3 Memorandum of Understanding between South Africa and Botswana on water quality and water hyacinth management

RESILIM supported the JPTC task committee on water quality and water hyacinth management with a two-day meeting in August 2016 in Hartbeespoort Dam, South Africa. The meeting brought together legal and technical experts from the two countries to conclude the MOU on water quality and aquatic invasive species management between DWS South Africa and DWA Botswana, specifically targeting the border area between the two countries.

The main outcome of the meeting was an MOU that is legally acceptable to both countries and ready for signature by the authorities in the ministries of water. Other outcomes include an agreement to jointly carry out a monitoring survey, which involves sampling at common sites to determine water quality and levels of water hyacinth infestation. RESILIM also took the opportunity to share the draft communications strategy that had been developed for the JPTC. This has now been handed over to the Communication Focal Points of the two countries for their revision and finalization.

It was also agreed that a few representatives of the task committee should attend the South African DEA Interprovincial Aquatic Weeds planning meeting in September 2016, in order to enhance cross sectoral and cross border planning efforts.

2.6.4 Joint monitoring program

In September 2016, the JPTC Task Team initiated joint water quality and water hyacinth monitoring by beginning the survey of the South African part of the Basin. Monitoring of the Botswana part of the Basin will be take place in 2017. The monitoring program covers regular monitoring stations in the Limpopo River and its tributaries, including point and non-point sources of pollution. The data collected will be compared to a 2013 baseline status to determine whether water quality has improved or deteriorated.

2.6.5 Linking the JPTC with the DEA Interprovincial Aquatic Weeds Planning

On September 13 to 14, the South African DEA hosted an Interprovincial Aquatic Invasive Weeds Planning meeting in Polokwane, South Africa that included representatives of environmental departments from provinces of Limpopo, North West, Mpumalanga and Free State. Upon invitation that was extended at the JPTC Task Team meeting as mentioned above, members of the JPTC task committee on water quality and water hyacinth management from both Botswana and South Africa attended and shared the preventative measures that JPTC have put in place to reduce the spread of aquatic weeds between countries and across provinces. At the meeting the upcoming joint monitoring of Limpopo River water quality and water hyacinths was discussed and planned.

Looking forward, in Year Five RESILIM will support the technical sub-committee to execute more joint monitoring exercises, in the dry and wet seasons, to determine whether any changes have taken place in water quality and water hyacinth abundance against measurements made in 2013, RESILIM's second year. As part of implementation of the joint communication strategy developed in Year Four, RESILIM will provide technical and financial resources to the technical sub-committee to continue to jointly produce knowledge materials aimed at raising public awareness on the challenges associated with water quality and water hyacinth in the basin. The awareness materials will also highlight what the stakeholders within the study area are expected to do to help the two governments to mitigate the water quality and water hyacinth problems.

Support to the JPTC forms part of RESILIM's strategy to build and improve institutional capacity by putting mechanisms in place that will allow for continued resilience-building initiatives beyond the life of the program. The Botswana DWA and South African DWS made commitments to start budgeting in 2017 for joint activities of the sub-technical committee, and to incorporate personal development plans for key personnel in the South African DWS and DEA and the Botswana DWA who are working together on these issues.

2.7 Collaborating to protect endangered wildlife: the Rhino Conservation Lab

Rhinoceros are emblematic of the threats to biodiversity created by land-use change and economic pressures in the southern African region. RESILIM's involvement with diversifying livelihoods in the protected areas of the Limpopo Basin where poaching is common, its support to the training of prosecutors and magistrates in dealing with wildlife crime, and its participation in the CITES process have been efforts to find options for communities to co-exist with, and benefit from wildlife.

RESILIM committed to support a Rhino Conservation Lab where stakeholders from the public and private sector, NGOs, experts and community representatives would develop a Rhino Conservation Implementation Plan, with agreed solutions, detailed execution plans, responsible parties, timelines and targets. This lab ensures high leadership commitment to the plan as the appropriate ministers signs off on the lab initiatives.

This Rhino Conservation Lab is part of the South African DEA and the Department of Tourism's Environmental Diversity Lab, seeking to enhance the economic contribution of South Africa's biodiversity in a) bioprospecting, b) wildlife, and c) marine and coastal tourism. The Lab brings together different stakeholders develop integrated solutions for problems that are traditionally prone to silo thinking.

Participants from government, industry, civil society and academic institutions worked for five weeks in August 2016 to develop detailed implementation plans to unlock the potential of these biodiversity sectors and resolve the most critical challenges the sector faces.

The report about the Lab is yet to be issued by DEA.

2.8 Supporting community action: evaluation of proposed mining in the Nylsvley wetland

Mining is an important industry in South Africa, but it is also an industry with a damaging effect on the environment. It often pollutes the water, air and soil, that impacts negatively on the availability of water which increases the vulnerability of communities and ecosystems.

In April 2016, the Limpopo Department of Economic Development, Environment and Tourism (LEDET) refused the environmental authorization for an open cast chrome mining project close to one of the biggest wetlands in South Africa, the Nylsvley wetland, following formal comments from the Nylsvley Action Group, as well as input from RESILIM. At the Waterberg District "Wetlands for Prosperity" Workshop in September 2015, RESILIM had met members of the Nylsvley Action Group, a civil society group opposed to the mining application. Recommendations from RESILIM's Risk and Vulnerability Assessment of the Limpopo Basin formed part of the group's formal opposition to an Environmental Impact Assessment report for establishment of the mine. The science from the risk and vulnerability

Figure 13: *The Nylsvley Wetland in the Waterberg, South Africa, is the largest wetland in South Africa and home to hundreds of different bird species attracting thousands of avid bird watchers from across the world. Photo credit: Nylsvley Nature Reserve.*

report, specifically on mine acid drainage and its implications on water ecosystems, was used to argue against setting up a mine in the sensitive wetland area.

The mining company has objected to the ruling and is using its last legal resort to appeal to the Provincial MEC to overturn the refusal. RESILIM responded to some of the mining project' comments about the content of the risk and vulnerability report. The outcome of the mines appeal to the MEC has not yet been decided.

2.9 Improving knowledge for evaluating ecosystem services: training in environmental flows

Trained 25 stakeholders in water conservation and demand management

RESILIM recognizes that the management of environmental flows (eflows) is critical for the conservation of healthy ecosystems, and increased resilience of livelihoods in the Basin.

In Year Four, RESILIM partnered with IUCN and WaterNet, to deliver a training workshop on environmental flows in Cape Town, South Africa in July 2016 (see Annex 9) for details of training). The workshop was well attended by Limpopo Basin water resources policy makers and managers, MaB representatives, as well as planners in aquatic weed management, agriculture, conservation and economic development sectors and representatives from LIMCOM. Key inputs and case studies were presented by the Orange-Senqu River Commission (ORASECOM), SADC and the Lesotho Highlands Water Project. The training workshop focused mainly on theoretical aspects of eflows, but included a field visit to the Berg River Dam, the only dam in South Africa where environmental flow management is currently successfully implemented.

Environmental flow *is the water regime provided within a river, wetland or coastal zone to maintain ecosystems and their benefits where there are competing water uses and where flows are regulated (IUCN, 2003).*

View the video here!

RESILIM also captured the event on film and interviewed the trainers and others for another addition to the Resilience Video Series which was made available in August 2016[3].

For LIMCOM and related institutions to prioritize eflow measurement and management, the value of the river's different ecosystems needs to be established. Both practical and theoretical aspects of valuing components of an ecosystem need to be demonstrated. Continued improvement of the skills and understanding of LIMCOM and related institutions to deal with the practical aspects of eflows management and ecosystems valuation is important. RESILIM, through its partners, will in Year Five, offer an advanced training on ecosystems valuation to address this need. This upcoming training will deliberately target the same institutions that participated in the first training with a view to further strengthen their skills and capacities in eflows management. The training will include quantitative and qualitative measures of the economic and non-economic values of natural resources, and introduce participants to valuation tools and techniques. Linking theory with practice will help build the participants' ability to take environmental issues into consideration in economic decision-making.

[3] https://vimeo.com/180847547

3. Component 3: Capacity of stakeholders to manage water and ecosystem services improved

3.1 Engaging and empowering local communities: the Tati River Management Committee and clean-up

Supported setup of river management committee for climate resilience

Botswana's Tati River is a tributary of the Shashe River, which in turn feeds the Limpopo River, and flows through the Greater Mapungubwe TFCA, providing water to critical ecosystems. This TFCA is an area identified by RESILIM's Risk and Vulnerability Assessment as a highly vulnerable area of the Basin where climate change is expected to put more pressure on an already water-scarce area. Water flow in the river has been reduced because of upstream dams, and water quality threatened by pollution in the Francistown area.

In previous years of the program, RESILIM assisted with establishment of the Tati River Management Committee (TRMC), with members from the private sector, NGOs, government and civil society. The main role of the committee is to coordinate, in partnership with these stakeholders, the management of the Tati sub-catchment in and around the Francistown City area. During the committee's infancy, RESILIM supported monthly meetings and development of a work plan and communication strategy.

In Year Four, RESILIM facilitated implementation of the Tati River Management Committee's work plan with a one-day training on climate resilience and sub-catchment management for government officials from the departments of Water Affairs, Town and Regional Planning, Mines, and Waste Management and Pollution Control. Other trainees included members of Tribal Authorities and the Francistown community.

The objectives of the training were to build the capacity of the 40 trainees to better understand:

a) the impacts of climate change on rivers and catchments;
b) the water quality issues in the Tati River sub-catchment, such as poor waste water management;
c) biodiversity conservation as a climate change adaptation strategy; and
d) basic principles on catchment management and river rehabilitation.

The trainees also identified various economic opportunities that could be sustainably operated to support community livelihoods through private sector partnerships, such as flood recession farming of organic produce, fish farming, and ecotourism enterprises along the river.

The training was followed by a two-day clean-up exercise of the Tati River where government departments, the private sector and the community partnered with RESILIM to clean the river banks of solid waste. Seven hundred people participated in the campaign.

***Figure 14**: RESILIM in partnership with the Botswana DWA set up five sign posts along the river reading: "Our river, sustaining current and future livelihoods."*

In Year Five, RESILIM will provide technical and financial support for completion of a planned survey of the extent of degradation of the Tati sub-catchment and how best to control weeds infestation, followed by advanced training for NGOs and community members.

3.2 Creating accessible knowledge: development of the Limpopo Basin Atlas

In Year Four, RESILIM, in partnership with GWP-SA and GRID-Arendal, produced a final manuscript for the *Limpopo Basin Atlas on Our Changing Environment* (Annex 10). The Atlas will provide evidence-based analyses on environmental and socioeconomic changes in the Limpopo River Basin, including their drivers and outcomes, in a format that is user-friendly for most planners and policy makers in the basin. The Atlas contributes to RESILIM's objective of raising awareness by providing evidence-based information on the changes that have taken place in the basin over time, and improving adaptive capacity of the basin and its citizens.

In Year Three, RESILIM partnered with the Southern Africa Research and Documentation Center (SARDC) to develop the manuscript for the Atlas with input and contributions from regional stakeholders. RESILIM identified additional resources through the partnership with GWP-SA and GRID-Arendal for an inception workshop and a manuscript review workshop, in the form of technical assistance and access given to SARDC in acquisition of additional data and maps by other institutions and organizations.

SARDC presented the methodology for the development of the manuscript to the LIMCOM Technical Task Team members at the inception workshop, and members were given the opportunity to comment and provide further guidance and input.

As part of the process leading to the production of the manuscript, in November 2015, SARDC carried out a capacity needs assessment of the contributors and authors, which highlighted key skills gaps, including the following:

- GIS and remote-sensing to support creating images that indicate change over time.
- Research skills to support narratives with credible sources that are validated and identifiable.
- Selection of appropriate visuals to accompany the narrative.

Based on the findings of the training needs assessment, GRID-Arendal developed and facilitated a training program which took place over five days in May 2016 in Harare, Zimbabwe. This training was not only successful in increasing the capacity of the SARDC team in cartography and GIS but also resulted in the actual development of satellite pair images that showed negative impacts of drought on the Gaborone dam and the severe reduction in the spread of mangroves in Mozambique as well as a satellite image indicating the location of dams in the Limpopo Basin. These images contributed to the final manuscript along with others that were developed to accompany the narrative by the SADC team in consultation with GRID-Arendal.

In June 2016, the draft manuscript was presented at a two-day regional stakeholders meeting in Johannesburg, South Africa. Through presentations on each chapter, discussions and extensive group work, stakeholders reviewed and validated the manuscript with the aim to improve and strengthen the content and the visual impact of the product, as well as further identifying additional sources of relevant data and case studies for inclusion in the manuscript. The stakeholders at the workshop provided extensive input to the manuscript, and the comments were incorporated into a final draft.

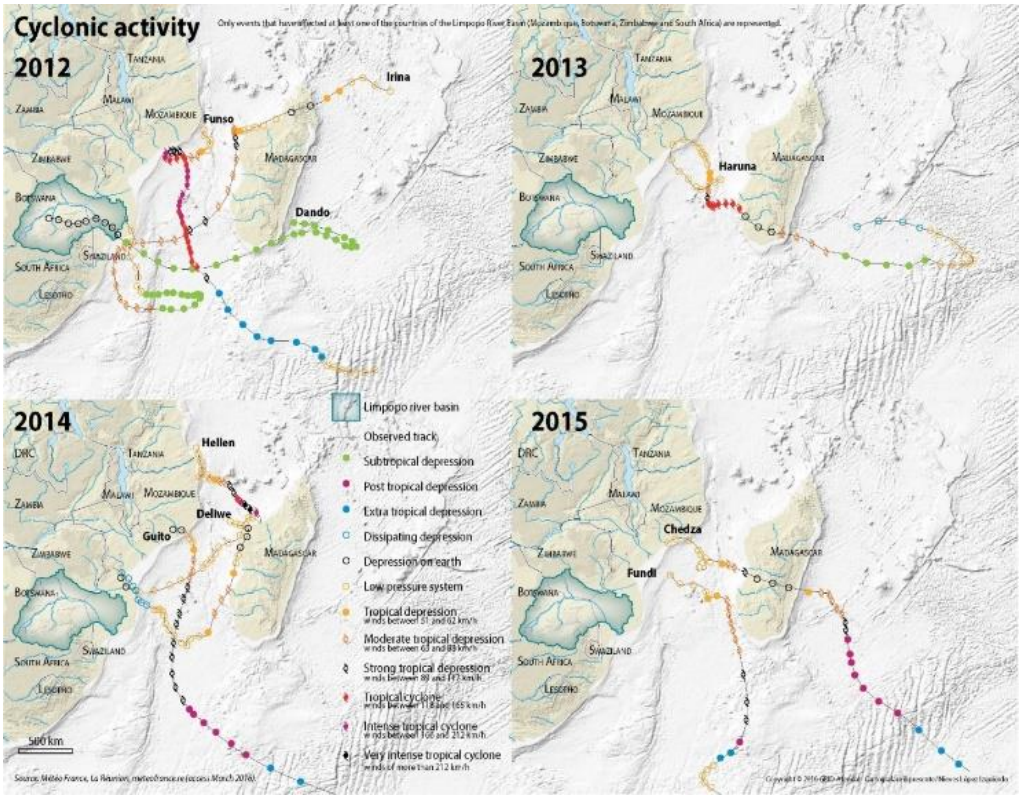


Figure 16: *An example of imagery used in the Atlas to visualize change over time - Cyclones in the Limpopo River Basin between 2012 and 2015.*

In Year Five RESILIM will continue to work, under the current partners' agreement, with GWP-SA and GRID-Arendal to produce a "coffee table" version of the Limpopo Atlas. Both the main Atlas and the "coffee table" version will be launched at an event that will bring together the LIMCOM technical task team and commissioners, as well as other potential users of the product. RESILIM will use the launch to share other RESILIM-supported technical reports, knowledge management products and lessons learned. The Atlas is based on previous assessments of the Limpopo Basin, including the Limpopo Monograph Study and the RESILIM Risk and Vulnerability Assessment. The key findings will contribute to the development of LIMCOM's next strategic plan for 2016 – 2020 (LIMCOM Vision 2020). The product also contributes to fulfilment of the SADC Regional Strategic Action Plan's Program 5: Infrastructure Development; Program 6: Water Resources Management; and Program 7: Climate Variability and Change. The Atlas will also be a useful tool for LIMCOM to strengthen transboundary cooperation as it will highlight the importance that planners and policy makers should incorporate regional challenges in their planning processes at national level.

3.3 Informing policy makers about critical threats: high level meetings

Both RESILIM and SAREP are programs of USAID Southern Arica that are in their final stages of implementation. The programs seek to leave a legacy at a macro-level or ministerial level that will increase awareness, participation and collaboration at the highest level that will build cross-border or transboundary resilience of the people and ecosystems of southern Africa to climate change.

Co-hosted high-level dialogue

Initial scientific literature reviews indicate that southern Africa is greatly exposed to climate change and unprecedented population growth rates, which results in increased demand in energy and water for sustainable livelihoods and economic development. Many countries want to improve their food security through commercial irrigation, which places further stress on water demand. There is great need for continued collaboration among countries to share water and its benefits.

On the basis of SAREP and RESILIM's work and the lessons learned, the programs identified the need to create greater awareness and deeper understanding amongst southern Africa ministers and senior decision makers of the integrated nature of issues pertaining the food-energy-water nexus (FEW-nexus), as well as the need for greater collaboration through scenario planning and development and implementation of strategies to achieve sustainable economic development and growth in the region. In Year Four, the programs decided to hold a ministerial high level dialogue on the FEW-nexus, and, in preparation, the programs engaged sector experts to quantify some of the critical threats to and drivers of resilience in the region.

3.3.1 Planning and development of materials

In February 2016, RESILIM and SAREP brought together thinkers who are exposed to the issues around the FEW-nexus, to develop discussion papers to inform the ministerial dialogue.

At this meeting three areas of focus were agreed upon to inform scenario planning:

4. *Regional Collaboration. The need for countries to use their natural resource potential strategically as a region.* For example, consider the impact of no water sharing agreements on water security or national food security strategies that aren't looking at regional or international trade options; or the implications of loss in regional collaboration because of other external driving forces.

5. *Involuntary migration* – The loss of socioecological resilience can lead to the large scale involuntary migration of people in search of better livelihoods. Mass movement of people from Zimbabwe to South Africa is already a reality. The implications of climate change and the youth population bulge may increase the need for people to move out of Zimbabwe, with potential similar driving forces in other countries, culminating in greater pressure for resources in the receiving countries. For example, what will happen if water in the Okavango River stops flowing, and tourism declines, people lose their employment, food and water resources and are forced to find work elsewhere?

6. *Loss of socioecological resilience of rural landscapes and wilderness areas.* The loss of socioecological resilience within rural communities through the impacts of climate change such as crop failures, and population growth that leads to loss of economic opportunities and increasing pressures for arable land, will place greater pressures on the region's wilderness areas. Illegal use of bush meat and ivory are socioeconomic issues. How will an increase in wildlife crime affect tourism and ecosystems?

Papers were also developed on food security; energy security; transboundary water security; natural capital and environmental status of the region; economic and infrastructural development plans and objectives of the focus countries through an analysis of southern African countries' National Development Plans, wildlife viability, regional wilderness connectivity and Community-based Natural Resources Management.

In April 2016, the discussion papers were scrutinized by SARA and finalized. RESILIM and SAREP used these papers to inform and guide the scenario planning during the ministerial dialogue.

3.3.2 The Pilanesberg retreat

RESILIM and SAREP hosted nine high level delegates from the riparian countries of the Limpopo and the Okavango Basins at a two-day retreat in the Pilanesberg National Park, South Africa in August 2016.

At the event, RESILIM and SAREP, together with sectoral specialists, facilitated the development of potential scenarios the sub-continent would experience by 2050 in the face of extreme population growth and the impacts of climate change, depending on the development strategy adopted by the region. The group explored various opportunities and options to mitigate the negative consequences of these trends.

Based on these presentations, participants identified two key variables as important determinants of future resilience: 1) the degree to which countries in the region would work collectively or individually towards the goals of food, water and energy security; and 2) the levels of human and natural capital available at national level to address challenges. Participants also considered the options for building resilience in the region and agreed that, overall, the region leaned towards a fragmented approach to addressing challenges, and while levels of human and natural capital varied significantly across countries, it tended to be on the low side when viewed collectively.

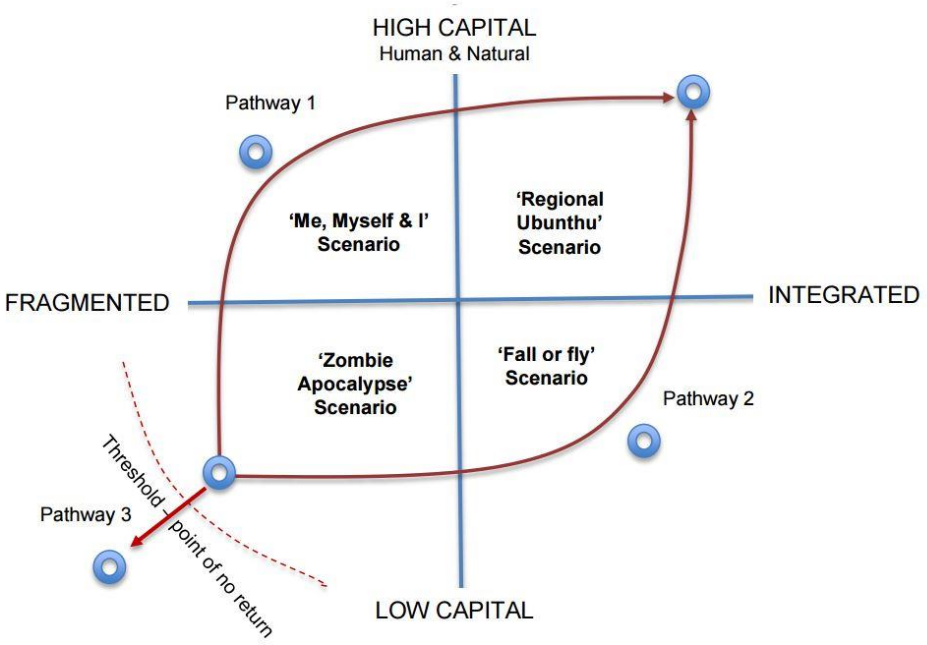


Figure 17: *Options reviewed by participants for building resilience in the Limpopo Basin*

By the close of the retreat, delegates reported a deep sense of urgency for increased regional cooperation, collaboration and integration of planning across sectors, as well as their commitment to form the core of an emerging and expanding regional network of champions to drive the development of innovative mitigation and adaptation approaches and measures to address the converging influences of climate change and incremental population growth and build the resilience of people and ecosystems in the region.

3.5 Acknowledging the role of LIMCOM: SADC Ministerial Workshop on the Water and Energy Crisis in Southern Africa

SADC countries' ministers of water and energy attended a workshop in June 2016 in Gaborone, Botswana, to discuss and exchange ideas, and forge practical and sustainable solutions to address the energy and water crisis in the region, with a view to map out a strategic direction and agree on a way forward for securing energy and water in the region.

During the discussions for water challenges, the SADC Ministers commended LIMCOM for the noticeable progress in the implementation of programs in the face of major challenges with the institutional set-up of LIMCOM. Specific progress noted by the Ministers included some of the interventions that are being driven and supported by RESILIM: development of the Basin Disaster Risk Reduction Action Plan; the Water Demand Management scenarios for the Basin and the LIMCOM Vision 2020; assessment of

LIMCOM's Institutional Capacity Development; development of the Basin Atlas, development of a Livelihoods Diversification Strategy for the GLTFCA; and the Science and Innovation Initiative on the Management of sub-surface water of the Ramotswa Transboundary Aquifer in the Limpopo River Basin.
On the topic of LIMCOM's institutional challenges, the SADC Ministers urged the LIMCOM Member States to expedite full establishment of the Secretariat and its resourcing to full functionality. Ministers also noted and urged LIMCOM Member States to take advantage of the support and funding opportunities that are availed by ICPs such as USAID, to enhance LIMCOM's capacity to deliver its goals and improve the lives of the people of the basin.

3.6 Reaching youth with research: the Science for Resilience Expo

RESILIM recognizes the importance of youth in building a sustainable future for the Limpopo River Basin. In Year Three, the program raised awareness about the Limpopo River Basin and existing climate, biodiversity and livelihood-related challenges among more than a thousand young people at a Science for Resilience Expo in South Africa that was facilitated and hosted by the Kwalata Community Development Initiative (KCDI). Building on this success, in Year Four, RESILIM supported the 2016 event, and explored its expansion in the Limpopo region.

***Figure 18**: Students at the Limpopo River Basin structure during the Science for Resilience Expo.*

The 2016 Expo took place over three days in May in the Dinokeng Game Reserve, north of Pretoria, South Africa. A model of the Limpopo River Basin and some of the challenges being faced in the basin was presented by youth facilitators from the local community to over 1 100 students that attended the expo. The facilitators explained the characteristics of the basin and the interconnectivity among climate, water, biodiversity and livelihoods in the basin and how upstream water-use decisions make an impact on downstream water-users.

The proposed site for upscaling the Science for Resilience Expo was the Matopos area in the Zimbabwe portion of the basin, a high altitude catchment area that produces large quantities of water for the basin and harbors high levels of biodiversity. A highly visible event in Matopos such as a Science Expo would raise awareness of this little-known, but important fact.

RESILIM, together with the KCDI conducted a feasibility study in March 2016 for upscaling the expo to Zimbabwe and met with possible government, private sector and NGO partners, as well as visited potential venues and schools. Following the feasibility visit RESILIM decided to bring five Zimbabwe stakeholders on an exchange visit to South Africa to experience and learn from the expo, and provide further insight into the possibility of having a similar expo in Zimbabwe. The group discussed and put forward recommendations for a possible expo in Zimbabwe.

3.7 Institution building: developing a 2020 Vision for LIMCOM

The implementation period for LIMCOM's 2011 to 2015 IWRM Plan for the Limpopo Basin recently elapsed. In Year Four, RESILIM took the opportunity to assist LIMCOM with review of progress achieved through the IWRM Plan 2011 to 2015. Building on this, RESILIM is also supporting LIMCOM to develop the next LIMCOM Strategic Plan for 2016 to 2020, with a view to incorporate resilience building activities that focus, not only on water, but also on climate adaptation and the mitigation of threats to biodiversity.

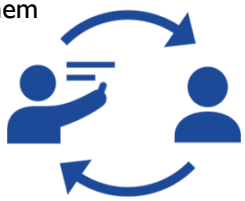
Supported the review and improvement of LIMCOM strategy.

The review process involved a desk analysis of the 2011 to 2015 LIMCOM IWRM Plan as well as consultation interviews with LIMCOM members and implementing partners. This was followed by a meeting in September 2016 where the LIMCOM Technical Task Team reviewed implementation of the 2011 to 2015 LIMCOM IWRM Plan and associated regional and national programs and initiatives that could support a visioning process, which took place the next day. The meeting also considered LIMCOM's mission, governance, and activities, and weighed these against the institutional strengths, weaknesses, opportunities and threats, or SWOT, to resilience building in the basin. Development of the LIMCOM IWRM 2016 to 2020 (Vision 2020) is in this way guided by challenges identified during the review of performance on the implementation of the 2011 to 2015 Plan and well aligned with the SADC Regional Strategic Action Plan IV (2016 to 2020).

Moving forward, these outcomes will inform the drafting of the 2016 to 2020 strategic plan and vision for LIMCOM. A resource mobilization strategy for LIMCOM will be delivered as part of the process of development of LIMCOM Vision 2020. Annex 11 shows a SWOT analysis done on LIMCOM, highlighting some of the factors that inhibits LIMCOM's future performance.

3.8 Bridging science and decision-making: knowledge management for resilience workshop

Scientific knowledge is not always easily accessible to decision makers, including policy makers who look to the scientific community to give them answers and help them make policy decisions. Scientific knowledge is often embedded in technical journal articles and scholarly books that only a small group of scientific peers can understand. Furthermore, scientists often do not understand decision makers' information needs in the first place.



Increased capacity of stakeholders to communicate climate and biodiversity science

The need for good science to inform environmental policy decisions is arguably more urgent than ever before. Both the proper interpretation of science for both policy communities and wider society, and the development of a mutual understanding between scientist and policy maker of the role of scientific evidence in informing policy, is critical to effective environmental management. Science not only provides evidence of possible risks and threats but also identifies opportunities for mitigating the threats and for building resilience.

In response to these challenges, in Year Four RESILIM built on a RESILIM *Partners Sharing and Learning Workshop* held in August 2015 where RESILIM's partners were recognized as a community of practice on resilience, climate change adaptation, protection of biodiversity, and securing of water resources in the Limpopo River Basin.

RESILIM also hosted a one-day workshop, *Bridging the Gap between Science and Action,* in April 2016, with twenty-two partner representatives participating. Various RESILIM partners presented their activities, shared lessons learned in the implementation of these activities, and strengthened linkages through networking. During the workshop, RESILIM, through OSC, facilitated a session on knowledge management and the packaging of scientific information for improved decision making and policy development, focused on building resilience.

Workshop participants indicated through a post-workshop survey that they now had an increased understanding of methods to better communicate scientific information with decision makers at all levels.

3.9 Creating space for important conversations: *Resilience Rants*

In Year Four, recognizing the need for bringing conversations about the Limpopo's critical issues to more informal settings, RESILIM hosted two *Resilience Rants* - strategic knowledge management events for the RESILIM Community of Practice - with the purpose of stimulating discussion and creative thinking about some of the Limpopo River Basin's issues related to water conservation, mitigation of threats to biodiversity, and climate change adaptation. Participants included basin stakeholders from various government departments, NGOs, other USAID-projects, and USAID Southern Africa.

Hosted strategic discussions relating to the climate, biodiversity, water and livelihoods-nexus

In May 2016, Anthony Turton, world renowned water expert, and author of the water security paper for the high level dialogue retreat, addressed 22 basin stakeholders on *Understanding Water in the Context of Resilience and Economic Development,* after which a lively discussion took place among the participants.

Following the successful pilot, RESILIM hosted its second *Resilience Rant* in July 2016, featuring Dr. Rowan Martin, highly experienced wildlife ecologist, who talked about sustainable use of natural resources and the factors that threaten the region's natural resources and resilience.

3.10 Building early awareness: Young African Leaders panel discussion

In Year Four, RESILIM participated in a panel discussion at the request of the Young African Leadership Initiative (YALI) Regional Leadership Centre for Southern Africa (RLC SA). RESILIM, represented by Dr. Nkobi Moleele, presented its systems analysis of challenges in the Limpopo River Basin, and ongoing interventions aimed at improving adaptive and transformative capacities at the transboundary level, RESILIM was warmly received and a vibrant discussion followed among the 134 young leaders from 14 southern African countries who were attending the YALI cohort at the UNISA Graduate School of Business Leadership in Johannesburg, South Africa.

Figure 19: *RESILIM's Dr. Nkobi Moleele (right) with Kerry Reeves from USAID (left) and Linda Manyuchi (middle) from the South Africa Low Emissions Development Program, also a USAID program, at the YAL panel discussion*

The YALI RLC SA is developing young African leaders in the areas of business and entrepreneurship development; civic leadership; and public management and governance, through a combination of innovative and complementary

approaches that include contact sessions; online mentoring; online self-paced tuition; industry placements and experiential learning.

4. Other strategic activities

4.1 Consolidating connections for RESILIM: partnership meetings

Partnerships are key to the success of RESILIM, mainly through the learning that takes place when working together.

In Year Four, RESILIM hosted monthly program management meetings that brought together four of RESILIM's key partners – GWP-SA, PPF, IWMI, and MRCA. The partners were able to share progress updates, challenges, and lessons learned that could contribute to identifying new opportunities for building climate resilience in the Basin, and demonstrate the linkages among the various RESILIM projects at regional, bilateral and sub-catchment level. RESILIM believes that this platform for partners to regularly meet will lead to a stronger resilience community of practice for the Basin.

4.2 Combining experience: collaboration between RESILIM-B and RESLIM-O

RESILIM-Olifants program is a sister program to RESILIM that also a USAID Southern Africa program, focusses only on the Olifants Catchment of the Limpopo River Basin and is implemented by the Association for Water and Rural Development. RESILIM and RESILIM-O have the same results framework regularly interact with the same stakeholders and therefore and frequently engage with one another to share challenges and lessons learned regarding the implementation of the programs at basin and catchment level respectively, and to ensure the efficient use of USAID resources.

Figure 20: *Testing quality at a site in Thambazimbi along the Crocodile River*

In Year Four, RESILIM attended the RESILIM-Olifants Resilience Indaba where stakeholders from the Olifants sub-catchment of the Limpopo River Basin explored ways to collaboratively build climate resilience in respect of water, biodiversity and livelihoods.

RESILIM-O provided stakeholders with an update on progress made to date and shared lessons learned from implementing the program. In the group discussions, RESILIM shared experiences in building resilience at a basin-level. RESILIM, being in its "consolidation for legacy"- phase, was able to make meaningful contributions in the technical working groups.

RESILIM added value to the Resilience Indaba by providing a regional perspective to guide improved sub-catchment management for climate resilience. RESILIM identified areas to work more closely with RESILIM-O, such as including RESILIM-O in the MaB program, as the K2C Biosphere region falls within the Olifants catchment. Also, RESILIM and PPF's work on the development of an alternative livelihoods strategy for the GLTFCA falls within the Olifants catchment, and their Mozambique-partners, such as Verda Azul, are involved in this work.

4.3 Building on local efforts: supporting Botswana's North East District's Green Growth Strategy

RESILIM is part of a multi-sectoral technical group that was put together by Botswana's North-East District Council to oversee preparation of the Green Growth Strategy for the North-East District of Botswana, taking into account climate change potential impacts. The North-East District is in the headwaters of the Limpopo and shares a boundary with the Umzingwane sub-catchment of the Limpopo in Zimbabwe. Together, these two areas form part of one of the areas identified as highly vulnerable in RESILIM's Risk and Vulnerability Assessment, also known as Resilience Action Areas, which are likely to get drier, experience increased temperatures and shorter growing periods, increased frequency of droughts and floods, higher variability of rainfall, and acute soil erosion. RESILIM recognizes development of the Green Growth Strategy by the North East District Council as a response to some of these threats.

In Year Four, RESILIM worked with the North East District Council and other partners to develop the terms of reference (ToRs) for the proposed strategy. For instance, in November 2015, RESILIM attended a meeting in Masunga, Botswana, where the ToRs for the development of this strategy were concluded. As part of the process, RESILIM shared the results of the Risk and Vulnerability Assessment carried out on the Basin with the committee, and provided technical assistance on how the development process of the Green Growth Strategy should apply RESILIM's resilience nexus thinking.

In formulating the ToRs (Annex 12), the multi-sectoral committee, ensured that the North-East District Council will be a pilot, for the country and the Basin at large, in providing leadership in the area of sustainable development achievable through implementation of programs and projects mainstreamed into

normal district planning processes and practices. Specifically, RESILIM ensured that the process leading to the strategy would also assess threats from climate change, as well as threats that each sector poses to the natural resource base. It would further assess each sector and establish effective modalities for their greening.

The ToRs also emphasize the need, during the development phase of the strategy, for the North-East District to partner with other institutions and ongoing green related projects across the country and the Basin to ensure that mainstreaming of the environment into the existing district development framework is achieved.

Moving forward, a task force working with the North East District Council, will secure a consultant to drive the development of the strategy, with a technical group supervising the consultant. RESILIM will continue to provide technical support during the preparation phase of the strategy development, and findings of the RESILIM Risk and Vulnerability Assessment will provide critical foundational input into the proposed strategy and action plan.

The development phase of the strategy has, however, been delayed due to unforeseen budget shifts within the District Council. Due to the severe 2015/2016 droughts caused by El Nino conditions over southern Africa, funds had to be shifted to relief and to address food security issues in the district. The droughts brings to the fore the important need to incorporate adaptation measures in the Green Growth Strategy..

4.4 Strengthening a community of practice: the Southern African Resilience Alliance

In Year Four, RESILIM and SAREP co-facilitated a planning meetings between a small group of attendees, dubbed the "Southern Africa Resilience Alliance" (SARA), represented by members of SAREP, RESILIM, Resource Africa, Open Society Initiative for Southern Africa (OSISA), and IUCN. The group met to discuss the possible establishment of a forum on conservation and sustainable development.

The attendees explored various options, opportunities and mechanisms available to best achieve the aim of bringing together a group of critical thinkers to engage in dialogue, discussion and debate on important issues and trends affecting the subcontinent and suggest ways forward. Two leadership groups were established to plan interventions at the 17th meeting of the CITES and the IUCN World Conservation Congress in 2016.

This followed after the members of the Alliance called for a meeting to discuss the need to address a void left by the closure of both the IUCN Southern Africa Office and the World Wildlife Fund (WWF) Southern Africa Regional Program Office (SARPO) office, and the later demise of the Southern African Sustainable Use Specialist Group (SASUSG) in the region. Further meetings of SARA resulted in a collaborative approach to interventions at the CITES meeting and at the World Conservation Congress, including election of a SARA member as one of the IUCN Commissioners for Africa.

4.5 Building livelihood options: visioning for sustainable veld products used in Botswana

In March 2016, RESILIM supported the participation of two partners, the Kalahari Conservation Society (KCS) and the Kgetsi ya Tsie (KYT) marula oil producing women's group, to attend a SAREP-supported workshop about veld resources for 30 stakeholders from across Botswana. According to the concept developed by SAREP, Botswana, like the whole of the Limpopo Basin, is a country blessed with substantial diversity of wild natural resources, many of which have economic potential. However, there are currently very few NGOs and Community-based Organizations (CBOs), and even fewer businesses that have commercialized veld products, and with very limited success.

The key barriers to achieving success in this regard include financial problems, poor management, lack of training and marketing capacity, as well as logistical problems. If these barriers remain unattended the rural poor will continue being poor and will remain side-lined, while living in the midst of rich biodiversity with the potential to generate considerable income. The international market for "naturally grown" food, cosmetic and medicinal products is growing exponentially, while the demand for good quality functional crafts also is in demand by a discerning market.

A deliberate and concerted and coordinated effort should be made to implement a well-planned country-wide program of research and development, with a view to unlocking the economic potential of veld products across the country specifically and in the LRB, where 60% of Botswana's population resides. This will require a multi-disciplinary approach from diverse role players.

The purpose of the workshop was to solicit buy-in and create an association for the furthering of an agreed research and development program at will improve the resilience of the rural poor.

An interim committee of five members was nominated to spearhead the process. One of the interim members is KCS, a RESILIM-partner in the KYT intervention. The committee drew up its terms of reference with timelines on deliverables, and reported to the larger group within a period of two months.

The interim committee has now developed a constitution (Annex 13) that will be used to register the association, which will represent members in the promotion and development of an economically sound and environmentally sustainable natural products industry.

4.6 United States Government Accountability Office visit to Kruger National Park

RESILIM's work with exploring alternative livelihoods for communities near protected areas was supported by attention from the United States Government Accountability Office.

In early March 2016, RESILIM accompanied three representatives from the U.S. Government Accountability Office to the Kruger National Park to look at work dealing with wildlife trafficking and poaching, and how the United States Government is assisting with enforcement, mitigating impact as well as building long-term support for conservation with communities living next to protected areas.

The field visit highlighted the problems regarding wildlife life crime in the park, and some solutions being implemented with assistance from USAID, United States Bureau of International Narcotics and Law Enforcement Affairs and the U.S. Fish and Wildlife Services.

4.7 People and Parks Conference

RESILIM attended the 7th People and Parks Conference that took place on September 20, 2016 in Midrand, South Africa. The conference, convened under the theme "Unlocking Protected Areas' Economic

Potential", brought together more than 500 role players from different spheres of government, representatives of communities living adjacent to protected areas, conservation authorities, non-governmental organizations (NGOs), civic organizations, academic institutions, traditional leaders and land owners. RESILIM's Chief of Party participated, given that many of the aforementioned and present stakeholders are also partners of RESILIM in the building of community and ecosystem resilience in the Limpopo River Basin.

Annexes

Annex 1: M&E Progress Report.

Annex 2: DRR Action Plan.

Annex 3: Ramotswa Socio-economic and institutional Assessment

Annex 4: Ramotswa Hydrogeological Mapping

Annex 5: GLTFCA Livelihoods Diversification Strategy

Annex 6: GLTFCA – Integrated Conservation and Development Framework.

Annex 7: JPTC Communications Plan

Annex 8: JPTC MoU.

Annex 9: Eflows Training Report

Annex 10: LRB Atlas Manuscript.

Annex 11 LIMCOM SWOT Analysis

Annex 12: ToRs Botswana North East District's Green Growth Strategy.

Annex 13: Constitution for Botswana Natural/ Veld Products Association.